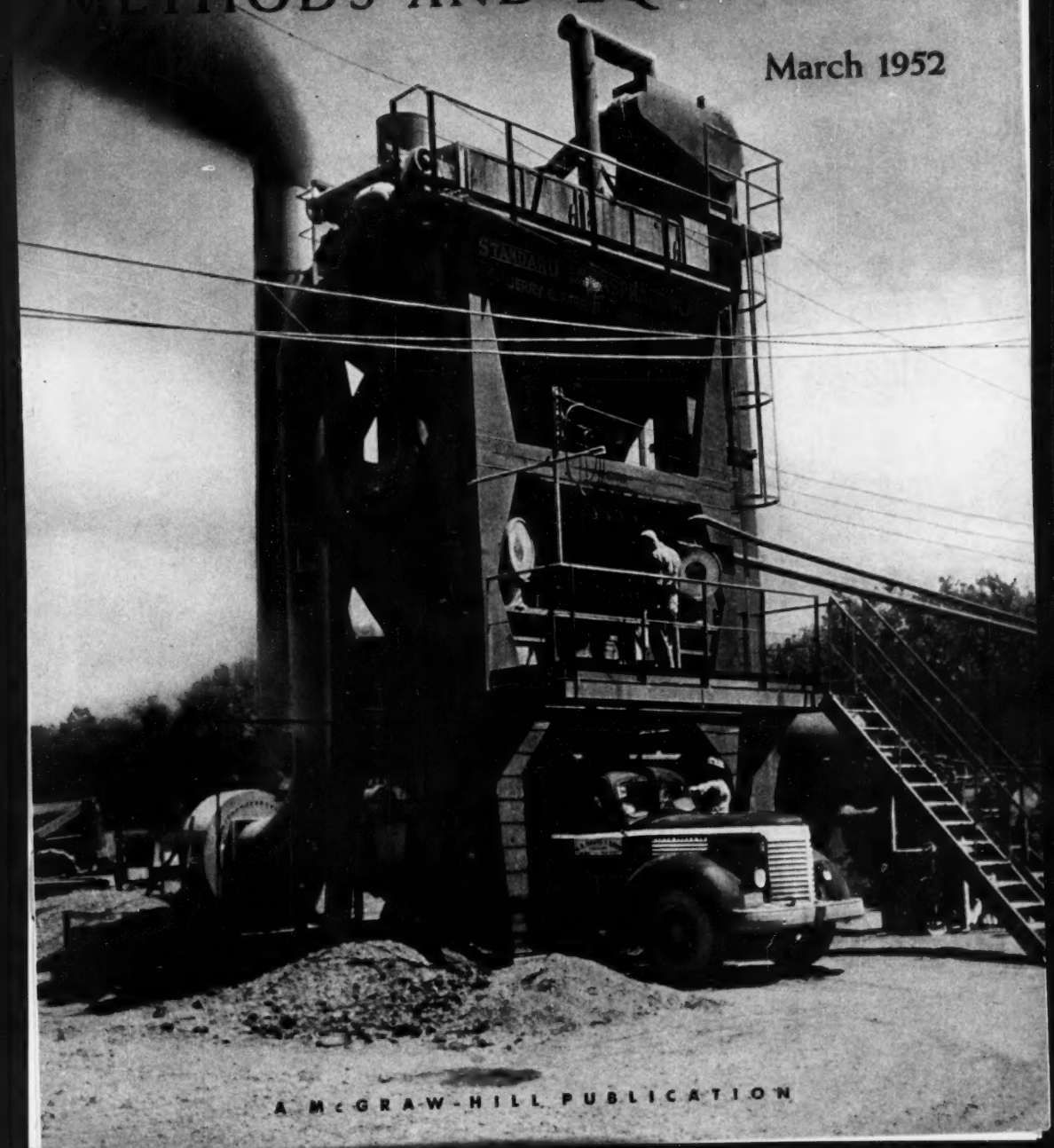
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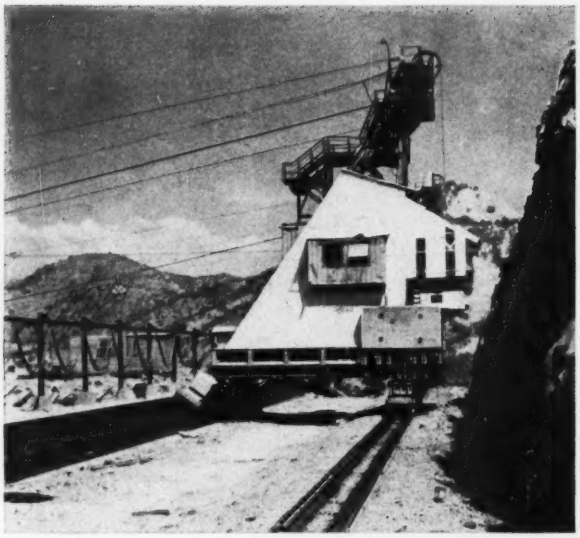
CONSTRUCTION

METHODS AND EQUIPMENT

March 1952



A McGRAW-HILL PUBLICATION



Cableway head tower, and tail tower across the canyon, are both driven on straight parallel tracks by G-E drives. Another set of towers for the service rig operates on the same tracks. Main cableway was built by Willamette Iron and Steel Co.

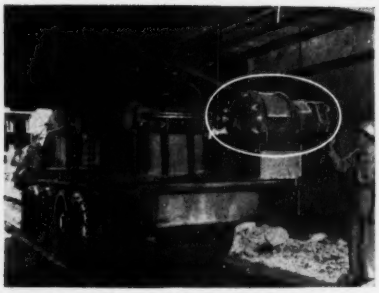
Cableway towers kept in line . . . electrically!

At Pine Flat Dam, G-E drives for movable head and tail towers prevent skewing, help keep pouring operations continuous!

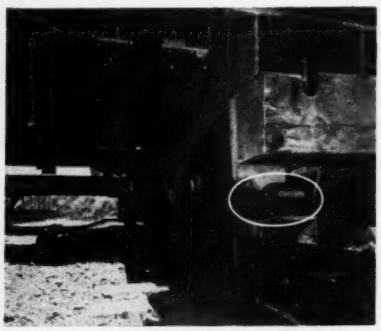
Here's an example of the versatility of electricity on construction jobs—a co-ordinated electric-drive system that helps keep an important project ahead of schedule. It's at Pine Flat Dam on Kings River in California, where a modern, high-speed G-E powered cableway—together with another rig for service functions—has set a pouring record of 4000 yards in one day.

All motors and control for the main cableway tower-drives on this Corps of Engineers dam, being built by Pine Flat Contractors Associated Companies, have been supplied by General Electric. In addition, the electric devices to keep the two cableways on the track, safely apart, and correctly aligned across the 2420-foot canyon, were all co-ordinated for the job by G-E application engineers.

This kind of engineering help—in application, installation, and service—regularly supplements G-E drives and power distribution systems, helps *you* get the most from *your* electrified construction equipment. *General Electric Co., Schenectady 5, N. Y.*



Under the head tower, this G-E 75-hp wound-rotor induction motor is one of two that drive the tower. Motors for head and tail towers are controlled by a single master switch in the operator's station.



Tower alignment is maintained automatically. This selsyn generator, connected to a head-tower wheel, and another on the tail tower, feed signals to a differential selsyn which controls speed of the tower-drive motors.

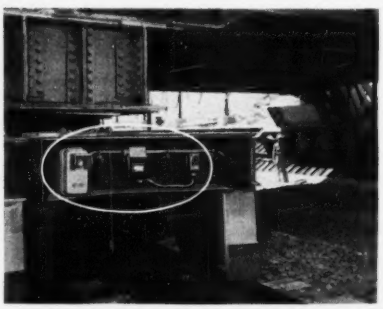


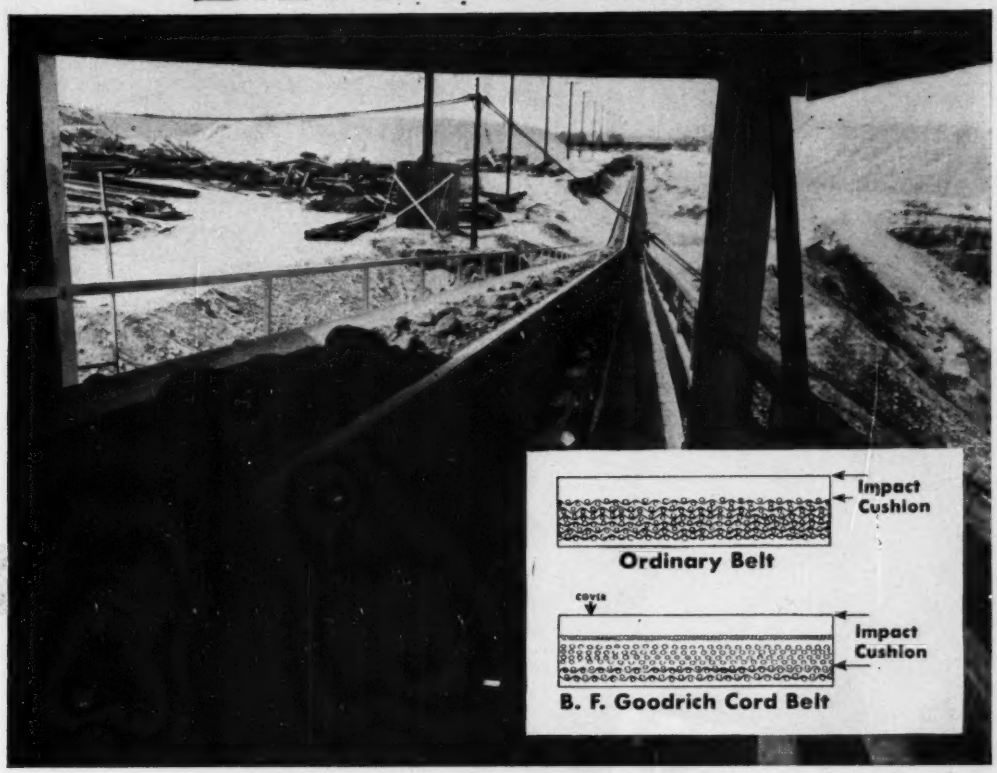
Photo-electric relays on each head tower automatically prevent the two rigs from colliding, and G-E limit switches keep towers from hitting stops at ends of the track. Thus operator can concentrate on spotting buckets.

Ask him today! **Whether you buy or build construction equipment, your G-E representative can show you how to do a better job—at lower cost—by complete electrification. Write him now, and he'll call on you at your convenience.**

GENERAL ELECTRIC

664-21

RESEARCH KEEPS **B.F.Goodrich** FIRST IN RUBBER



Where rocks ride a subway to cut conveying costs

B. F. Goodrich cord belt solves a rock-handling problem

THAT B. F. Goodrich cord belt carries rock from a quarry to a crusher a half mile away. It travels underground part of the way, under a public highway and two sets of railroad tracks, delivering 1,000 tons of rock an hour. It's been doing it for 3 years now, and is good for years more service.

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Cord belt stands more impact — Each lengthwise cord in a B. F. Goodrich cord belt is completely surrounded by rubber — no cross threads tie them together. Cords are free to "give" when impact occurs. Rubber distorts temporarily, distributing and absorbing a shock that would damage other belts. As an extra protection, B. F. Goodrich has added a patented *Transcord Breaker* — an extra layer of parallel cords in rubber, placed across belt width. Acts as a shock absorber, stretches to prevent gouges and cuts from splitting belt cover.

Cord belt troughs better — There being no crossweave in the cord plies, cords are free to flex. Belt conforms to idlers, pulleys. Spillage is reduced, troughing is natural and belt keeps centered on idlers, sustains less damage, requires less maintenance.

Cord belts for tough jobs — So whether it's heavy rock — or chunks of iron ore, coal, dirt, or gravel — B. F. Goodrich cord conveyor belts can do the job better and for less. Your local B. F. Goodrich distributor will show you how this belt can save you money. *The B. F. Goodrich Company, Industrial & General Products Division, Akron, Ohio.*

Conveyor Belts BY
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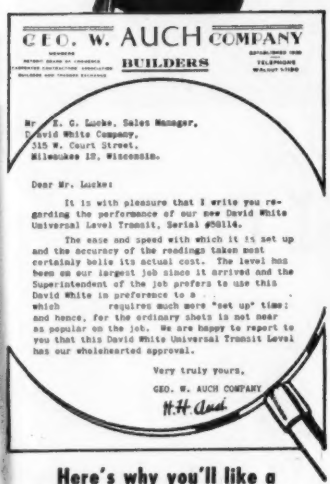
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1017

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● "We are happy to report . . . that the David White Universal Level Transit has our wholehearted approval."





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BUILDERS

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CONSTRUCTION METHODS AND EQUIPMENT

Volume 34, Number 3 **MARCH 1952** Established 1919

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Member ABC and ABP

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Uninterrupted { Service! Savings!



UNINTERRUPTED service means lower cost per cubic yard, lower cost per operating hour, over-all lower cost that adds up to important savings.

That's why Goodyear's Sure-Grip tire is *First Choice* with cost-conscious construction men. Its specially engineered O-P-E-N C-E-N-T-E-R tread and extra-massive, balanced lug bars make it *the* tire for drive-wheel traction, make your equipment earn more for you!

We think you'll like
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Every Sunday—ABC Network



ALL-WEATHER
Finest for flotation, rolling big loads faster

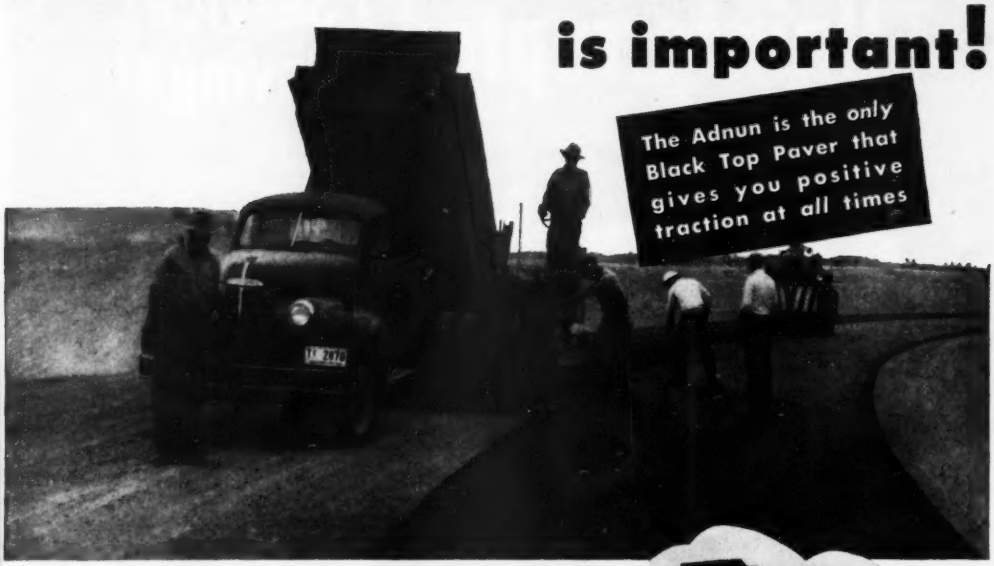
HARD ROCK LUG
Super-tough champ for all types of rock work

GOODYEAR

MORE TONS ARE HAULED ON GOODYEAR TIRES THAN ON ANY OTHER KIND

Sure-Grip, All-Weather—T.M.'s The Goodyear Tire & Rubber Company, Akron, Ohio

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WHEN you are handling a truck load of stone or asphalt mix with a Black Top Paver, positive traction is important.

The Adnun brings you four wheel drive—full power on all four wheels at *all* times. There is no loss of traction when turning as there is when braking one crawler to steer. There is no need for oversteering that results in correction and hand work. Steering is smooth and positive without jerking. Wheel design brings you simplicity and ease of upkeep and frees you from the wear and repair characteristic of crawler mechanism.

Behind this is the large, heavy duty engine—50 hp.—25% more engine power than the next most powerful spreader.

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Subsidiary of Blaw-Knox Co.
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BLACK TOP PAVER

A BLAW-KNOX PRODUCT — FROM FORMS TO PAVER TO FINISHER... ALL YOUR PAVING EQUIPMENT — IN ONE PACKAGE from BLAW-KNOX

Let down Adnun Retractable Wheels and hoist front end to truck with dump hoist and roll away —no trailer equipment.

no meat except chicken, other eats pork and chi but no beef—beef being

the lure now is the chance being in on the kill—that nig when some youngster will kno

the Bomber into retirement for keeps.

Up New England way they think the time has come. Spill-

punt just so the passer will have a chance to get the ball away without being chased

POWER BUGGIES SPEED WORK ON WORLD'S LARGEST UNDERGROUND GARAGE



WHITEMAN BUGGIES PLACING 50,000 CU. YD. OF CONCRETE FASTER—AT FAR LESS COST!

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Pour First Co it will take 5000 Gara

Trees and grass will soon grow again in Los Angeles' Pershing Square... but underneath will be parking space for 2000 cars at one time. Concrete for this 630,000 square foot garage is speeded to all parts of the job by Whiteman Power Buggies... over narrow runways, up 25% grades... then placed quickly with Whiteman's positive control "in-gear" dumping mechanism. One Power Buggy does the work of 6 men with wheelbarrows and does it faster. Carries 12 cu. ft., yet is light weight. 7.5 hp aircooled engine. Speeds up to 16 mph. Rugged, dependable. Priced to pay for itself in a short time. Send coupon for details *now!*

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Whiteman

CONCRETE EQUIPMENT

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B.F.Goodrich



Rock tires enable contractor to recap —never before possible

IDLEWILD AIRPORT, the Brooklyn Battery Tunnel and sections of the New Jersey Turnpike are just a few of the large construction jobs undertaken by the Gull Contracting Co., Inc., of Flushing, New York. Rugged projects like these subject off-the-road tires on this company's 50 fifteen cubic yard dump trucks and 130 other vehicles to extreme abuse — mud, rock, slime and debris. Says William Gull:

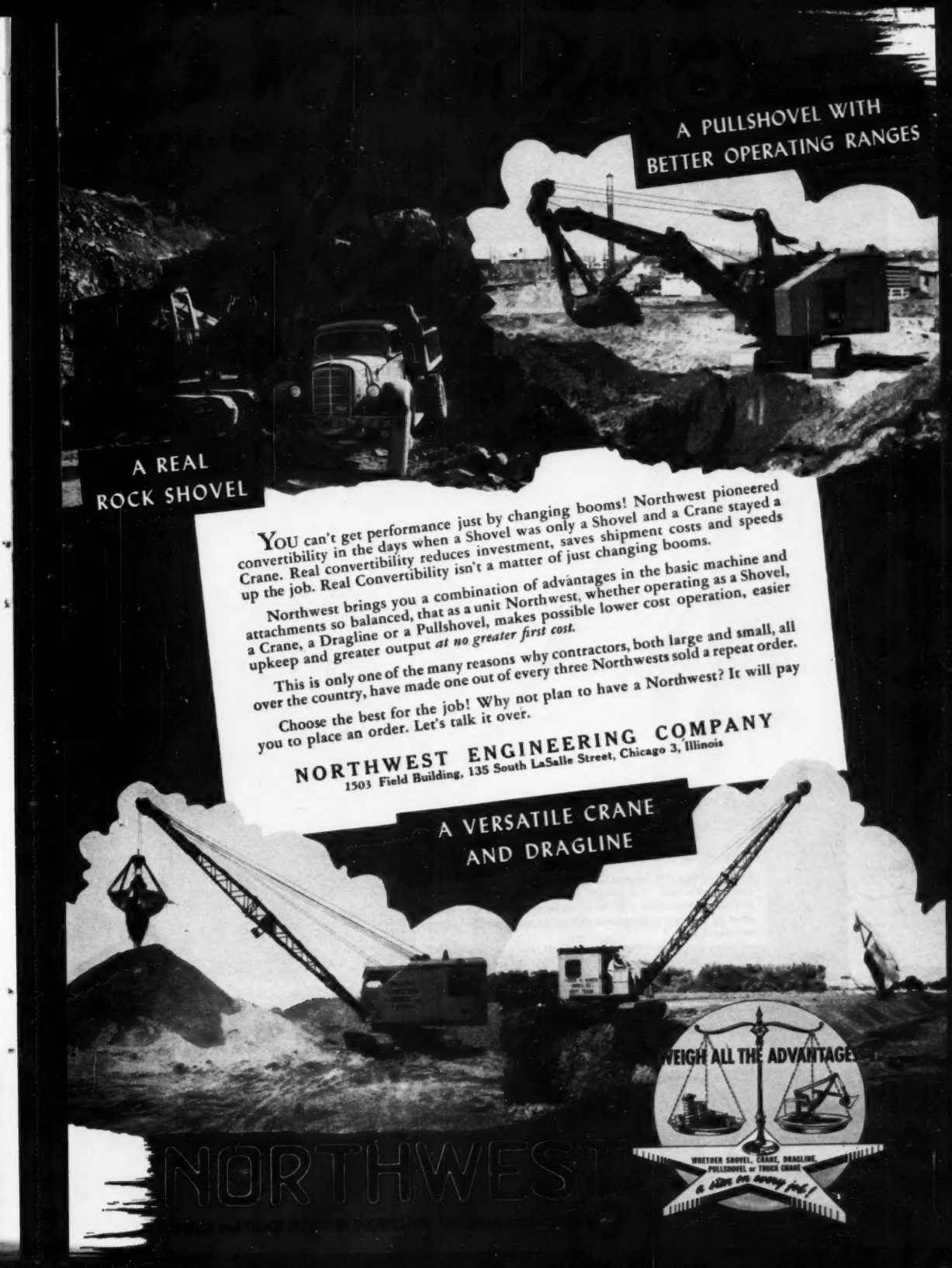
"Normally our tires take so much abuse that by the time the tread wears off, the casings are so badly cut and bruised that we discard them. Recently we got over 275 working days on a set of B. F. Goodrich Rock tires with nylon shock shields. The walls and casings held up so well that the tires were recapped. These tires are now in use and are performing excellently. This is the first time in 25 years of construction business that we were able to recap a set of tires."

And this company reports BFG tires give better traction and wear than other leading makes. The reason for such superior service lies under the tread rubber. There you'll find the nylon shock shield — an exclusive B. F. Goodrich development. Strong, elastic nylon cords stretch together under impact to shield the tire body from smashing road shock.

Off-the-road operators save money 4 ways because of this shield found in all BFG tires of 8 or more plies. More tires can be recapped for more miles per recap. Tire mileage is increased, bruise resistance is increased and there is less danger of tread separation.

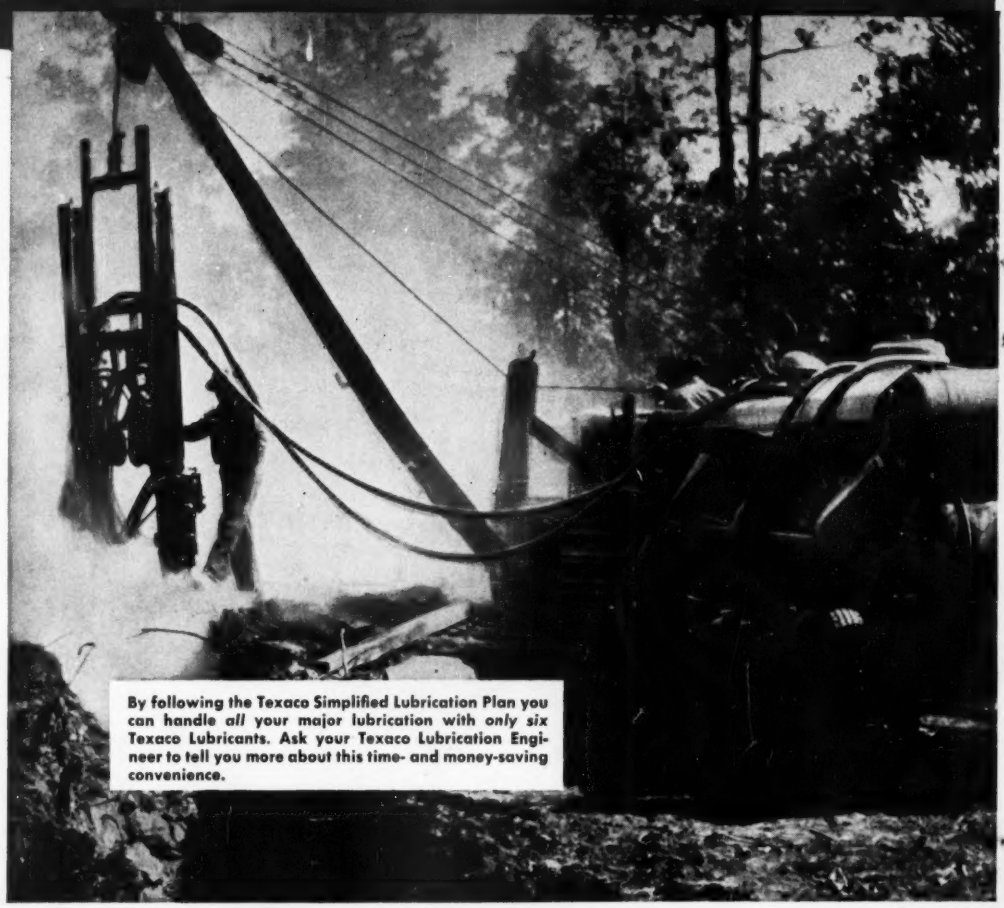
B. F. Goodrich makes off-the-road tires to meet your requirements and save you money. See your local dealer for complete details or write *The B.F. Goodrich Company, Akron, Ohio.*

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B.F.Goodrich
FIRST IN RUBBER


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A REAL
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A VERSATILE CRANE
AND DRAGLINE
WEIGH ALL THE ADVANTAGES
WHETHER SHOVEL, CRANE, DRAGLINE, PULLSHOVEL or TRUCK CRANE
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with ANY compressor

MORE EFFICIENT



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★★You can avoid the harmful carbon and gum that form under severe conditions by using a Texaco *heavy-duty* air compressor oil.

★★You can keep compressors clean and efficient in normal operation by using a Texaco *straight mineral* air compressor oil.

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A Texaco Lubrication Engineer will gladly work with you to keep all your equipment in condition to produce more at lower cost. Just call the nearest of the more than 2,000 Texaco Distributing Plants in the 48 States, or write The Texas Company, 135 East 42nd Street, New York 17, New York.

Lubricants and Fuels
FOR ALL CONTRACTORS' EQUIPMENT

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This is the most economical rope we've ever made for construction equipment

ROEBLING is the best known name in wire rope. That's partly because we were the first wire rope maker in America. But more than that, we've always led in developing better wire and better rope for every purpose.

Today's Roebling Preformed "Blue Center" Steel Wire Rope is the best choice for efficiency and long life on excavating and construction equipment. This rope has *extra* resistance to crushing and abrasion . . . stands up under rough going. It saves you time and cuts costs.

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(Above) Model TD Rear-Dump Euclid. 22 ton capacity . . . 14.8 cu. yds. struck . . . loaded top speed 32.4 m.p.h. . . . powered by 286 or 300 h.p. diesel engine.

(Below) Double-acting twin hoists and entire hydraulic system are of Euclid design and manufacture. Action is fast and positive enabling operator to control body position at all times.





REAR-DUMP EUCLIDS are engineered and built for lasting strength. Their ability to stay on the job, day after day and year after year, means more tons moved at lower cost . . . "plus" performance for owners.

"Euc" bodies have extra thick plates reinforced with heavy box section side and bottom supports. The rugged frames are built to withstand the impacts of hauling and dumping big loads . . . they're built to take the pounding and wear of loading earth, rock and other heavy excavation by large shovels and draglines.

Rear-Dump "Eucs" have many other "plus" features that make them standard equipment in mines, quarries and on construction work. For example, they have large capacity, ample power and traction for steep grades . . . speed on the haul road and full-floating, double reduction planetary type Euclid axle.

For information on equipment that is job proved on work similar to yours, get in touch with your Euclid Distributor or write direct for literature on the complete line of Euclid models.

The EUCLID ROAD MACHINERY Co., CLEVELAND 17, OHIO

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EUCLIDS

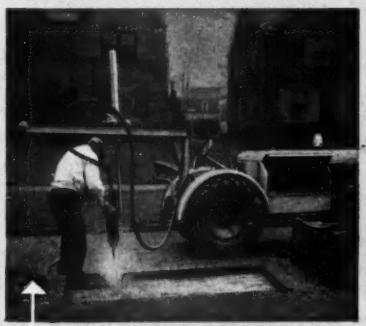
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TRACTAIR

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Hydraulically-operated Back Hoe — Tractor-compressor-back hoe combination offers big savings on digging jobs too small for power shovels, too big to be done economically by hand labor. Bucket sizes, 12" to 22". Digging depth, 6' to 7'. Swing, 60° each side of center.



Le Roi-CLEVELAND Patcher mounts on rear platform of Tractair. Drills closely-spaced holes within 7-foot radius, then breaches the section of pavement loose for easy removal. On this job, the bricks were removed first to get to the pavement underneath.



Pavement Breaking — Tractair puts air power to work running Le Roi-CLEVELAND Breakers. When the breaking job is done, Tractair mops up with its front-end loader. Tractair can be used also to run Le Roi-CLEVELAND sinker drills, clay spades, backfill tampers.

with Mobildrill

on railroad siding job gives more than twice former footage for less than half equipment cost

As much as 750 feet of hole daily, where only 300 feet were drilled before! More than double the production of three hand-held sinkers and a 315 cfm compressor! Substantial savings on both fuel and equipment costs! That's the remarkable record of a Le Roi Tractair Mobildrill on the Coal River Mining Company's development of a railroad siding at their strip mine in Nellis, West Virginia.

Tractair Mobildrill is a light-weight Le Roi-CLEVELAND wagon drill unit mounted on Tractair — a combination 35-hp tractor and 105-cfm compressor. One man can drive the Tractair Mobildrill and handle every phase of drilling — vertical and horizontal holes at any angle and any elevation up to 12'. Swinging boom permits drilling 4-6 holes of a pattern from one spot.

The Mobildrill attachment is just one example of how Tractair's versatility pays off in lower costs and minimum investment in special equipment. The usefulness of Tractair can be multiplied by using Le Roi-CLEVELAND air tools for breaking pavement, clay digging, tamping fill. Tractair also can be used for loading, lifting, backfilling, snow-plowing, etc., when equipped with a front-end loader and special attachments.

Prove this to yourself. Watch a Tractair at work. Make arrangements with your nearby Le Roi distributor. Write today for job-data sheets and bulletins on Tractair.



LE ROI COMPANY



MILWAUKEE 14, WISCONSIN

PLANTS: MILWAUKEE • CLEVELAND • GREENWICH, OHIO

Distributors in all these principal cities

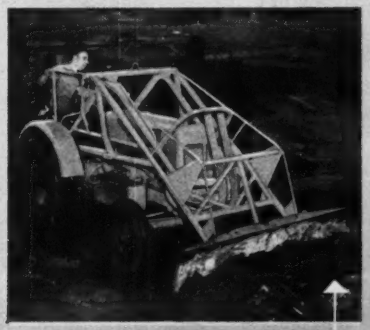
ALABAMA: Birmingham, Mobile — ARIZONA: Phoenix — ARKANSAS: Little Rock — CALIFORNIA: Bakersfield, Long Beach, Los Angeles, San Francisco—COLORADO: Denver, Grand Junction — CONNECTICUT: Hartford — FLORIDA: Jacksonville, Miami, Tampa — GEORGIA: Augusta, Decatur—IDAHO: Boise, Idaho Falls, Twin Falls—ILLINOIS: Chicago—INDIANA: Indianapolis—IOWA: Cedar Rapids, Des Moines, Waterloo—KANSAS: Great Bend, Kansas City, Pratt, Wichita—KENTUCKY: Lexington, Louisville—LOUISIANA: New Orleans, Shreveport — MAINE: Augusta — MARYLAND: Baltimore, Hyattsville — MASSACHUSETTS: Hyde Park, Newton Highlands, Worcester—MICHIGAN: Detroit, Grand Rapids—MINNESOTA: Duluth, Minneapolis — MISSISSIPPI: Jackson — MISSOURI: Joplin, St. Louis — MONTANA: Billings, Great Falls, Kalispell, Missoula — NEBRASKA: Omaha — NEW HAMPSHIRE: Manchester — NEW JERSEY: Cranford, Kingston — NEW MEXICO: Albuquerque — NEW YORK: Albany, Binghamton, Buffalo, Long Island City, Newburgh, Rochester, Saugerties, Syracuse, Whitesboro, Woodside (L.I.) — NORTH CAROLINA: Charlotte — OHIO: Cincinnati, Cleveland, Columbus, Dayton, Toledo — OKLAHOMA: Oklahoma City, Tulsa — OREGON: Portland — PENNSYLVANIA: Bethlehem, Harrisburg, Philadelphia, Pittsburgh — RHODE ISLAND: Providence — SOUTH CAROLINA: Columbia — SOUTH DAKOTA: Rapid City, Sioux Falls — TENNESSEE: Chattanooga, Knoxville, Memphis, Nashville — TEXAS: Dallas, El Paso, Houston, Lubbock, San Antonio — UTAH: Salt Lake City — VIRGINIA: Richmond, Roanoke — WASHINGTON: Seattle, Spokane — WEST VIRGINIA: Clarksburg, South Charleston — WISCONSIN: Milwaukee — WYOMING: Casper

T-29

MORE UTILITY! MORE PROFIT!



Loading — Front-end loader can be attached to Tractair in only a few minutes. Boom combines bucket and crane. Crane folds back out of way when not in use. Bucket holds 10½ cu. ft. — lifting capacity is 1000 lbs. Lifting capacity of crane is 800 lbs.



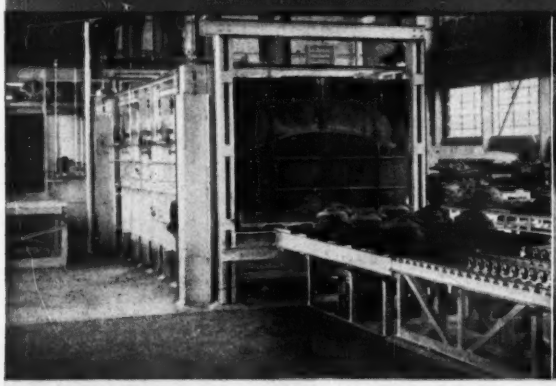
Backfilling — Replacing the bucket on the loader with a backfill blade adds to the variety of jobs a Tractair can handle. Backfill blade is 6' wide, mold board is 2'8" high. Maximum lift above ground is 1'4".



Tree-Jac — A Le Roi-CLEVELAND air-feed sinker drill mounted on a Tractair. Feeding and drilling controls are within easy reach of operator. The mobility of this unit makes it ideal for mud-jacking and many other applications.



SMOOTH, STEADY OPERATION of this ¾-yd. 22-B dragshovel is shown during finishing work on a large basement in Los Angeles, Calif.



SHOCK-RESISTING HARDNESS is given castings treated in this new, completely automatic heat-treat furnace. Such pre-assembly care pays off later in long machine life.



MODERN FOUNDRY METHODS are exemplified by this electric furnace in operation. In its own foundry Bucyrus-Erie has pioneered in the development of steels especially suited for excavating equipment.

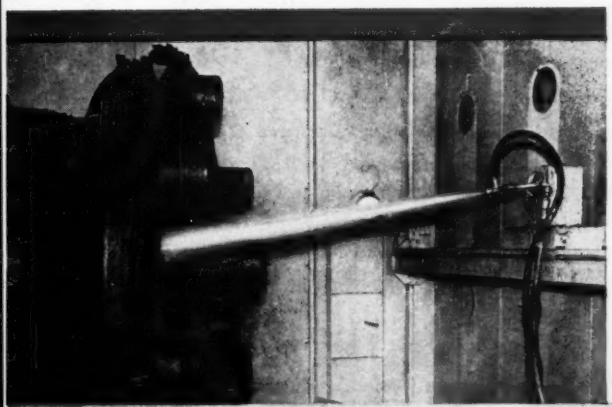
Here's Why You Buy Quality When You Buy Bucyrus

FOR 71 years the most-wanted excavator line in the contracting field—that's Bucyrus-Erie! Such year in, year out preference reflects the quality built into every Bucyrus-Erie machine — the result of the industry's largest full-time engineering staff, with an unmatched background of field experience, plus thorough laboratory tests of all materials. Such rigid manufacturing controls combine with careful field testing to produce a machine that **you know** will perform exactly as specified.

To a contractor engaged in the most extensive building program in America's history, this close attention to quality means that you'll have a machine that will take tough going in stride for many years to come . . . one that will offer fewer maintenance problems — produce higher output records with less downtime.

While heavy defense demands are in effect upon manufacturers of excavating equipment, it will pay you to see your Bucyrus-Erie distributor now for the delivery picture on this "quality proved" line of 3/8- to 4-yd. gasoline, diesel and single-motor electric excavators. They're worth waiting for!

308E51C



HIGH PRESSURE CLEANING of rough castings with sand-water-blasting equipment is but one of the high-grade casting-cleaning methods employed before precision machining.

Most Compared Most Preferred

BUCYRUS ERIE

SOUTH MILWAUKEE, WISCONSIN



UNIVERSAL CONCRETE ACCESSORIES "TOPS" IN CONCRETE FORMING

A COMPLETE LINE FROM 1 SOURCE

FORM TIES

STANDARD SPIROLOC

5000 to 30,000 lb. Form Ties for ⅜" to 1" threaded tie rod.

Furnished with either Handle or Nut Type Washers

.. Slip It On

.. Spin It On

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WALL THICKNESS

The Best "All Around" Tie In the Industry

Provides 5,000 to 30,000 lb. form ties

The TWISTYE

A Combination Form Tie and Positive Spreader Breaks-off 1" back of the wall face.

The FORM CLAMP

Provides tremendous holding power with The Sure Grip Principle

BUILDING SPECIALTIES

Dovetail Anchor Slot with Filler

Dovetail Brick Anchor

"Z" Type Stone Anchor

SOFFIT SPACER

BEAM CLAMP

WIRE BEAM SADDLE

WIRE BEAM SADDLES IN PLACE

BAR SUPPORTS

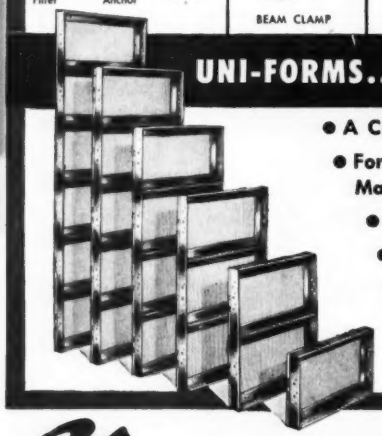
BEAM BOLSTER

BEAM BOLSTER—UPPER

SLAB BOLSTER

HIGH CHAIR

UNI-FORMS... "TOPS" IN CONCRETE FORMING



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- **Form Any Concrete . . . Using Less Lumber, Labor and Material Than Any Other Method!**
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Write for Catalogs describing Universal Concrete Accessories and UNI-FORMS—There's no obligation.

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Service Wherever You Build...Coast-to-Coast



This "Cat" No. 12 Motor Grader, equipped with DoMor elevating grader, is side burrowing at the rate of between 500 and 600 yards per hour.

They help speed completion of atomic project

Building access road to the Dugway Proving Grounds, south of Tinipie, Utah, the Olof Nelson Construction Company relies heavily on "Caterpillar" equipment.

"We think 'Caterpillar' products are tops," says Mr. F. F. McKinnon, Secretary-Treasurer of Nelson. "Cost of maintenance is low and they've got a long life. We have an old RD8 we were going to scrap four years ago, but it's still going strong. We get good service from our 'Caterpillar' Dealer."

Among the "Caterpillar" units on this job are three No. 12 Motor Graders—one equipped with a DoMor elevating grader. Two "Cat" D13000 Engines power a Telsmith crusher. The crusher is fed by "Cat" Diesel Tractors with 'Dozers. Nelson's lineup also includes six more D8s, a D7 and a No. 112 Motor Grader.

Concentration on "Caterpillar" equipment pays off three ways—in higher production, lower maintenance costs and simplified service problems. Good care of your units pays off, too—you get *extra* working capacity and longer life. Considering defense demands, that's mighty important today. To get the most out of your "Caterpillar" rigs, treat them right—and keep in touch with your "Caterpillar" Dealer.

CATERPILLAR, PEORIA, ILLINOIS

CATERPILLAR

REG. U. S. PAT. OFF.

DIESEL ENGINES
TRACTORS • MOTOR GRADERS
EARTHMOVING EQUIPMENT



STANOLUBE HD-M

REG. U. S. PAT. OFF.

Motor Oil

a new, tougher oil for tougher jobs!

● Since the introduction of STANOLUBE HD Motor Oil in 1942, Standard has led the way in the development of additive-containing lubricants for automotive and diesel engines. New STANOLUBE HD-M is tailored to meet the demands of today's increased severity of operating conditions. It's a tougher oil for tougher jobs! Here's what it offers to operators of heavy-duty equipment:

Longer engine life results from STANOLUBE HD-M's improved detergent-dispersant action. Engines stay clean under the tougher operating conditions caused by adverse fuel quality, higher running temperatures, and prolonged periods of severe service. Freedom from deposits means less engine wear. Less engine wear means longer engine life.

Lower maintenance costs result from STANOLUBE HD-M's greater oxidation stability. It helps keep pistons, rings, and valve stems free from varnish-like deposits and provides protective films of oil in the face of high operating temperatures. Less wear on engine parts and longer periods between overhauls mean lower maintenance costs.

Your nearby Standard Oil service-supply center stocks STANOLUBE HD-M Motor Oil for fast *local* delivery. This service-supply center is also headquarters for your Standard Oil lubrication specialist. Call him today. He can help you obtain maximum lubrication benefits with STANOLUBE HD-M . . . a tougher oil for tougher jobs! Or write: Standard Oil Company (Indiana), 910 South Michigan Avenue, Chicago 80, Illinois.

STANDARD OIL COMPANY *(Indiana)*

STANDARD

To drive home the facts . . . on the uses and advantages of

FOSTER RENTAL STEEL-SHEET PILING

this valuable

Free Bulletin

is yours for the asking



The story of how 7 big contractors—on 7 big jobs enjoyed savings, convenience, and dependability on their steel sheet piling requirements. Illustrated for your use in planning are diagrams and dimensions of the more popular sections of Interlocking Steel Sheet Piling. You'll learn that it pays to Rent from Foster—to get the exact lengths and exact sections *your* job requires—at Foster's low rental rates and without costly capital investment.

WRITE NOW—let us quote you on Foster's Rental rates for your current requirements. Write your nearest Foster office for Bulletin CM-3.

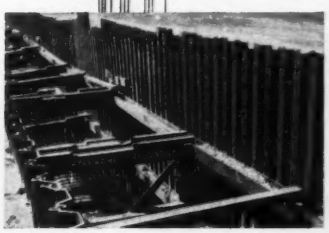
Everything for INDUSTRIAL TRACK • PIPE • WIRE ROPE

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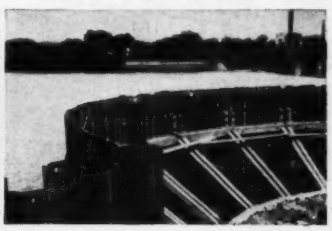
PITTSBURGH 30, PA. • CHICAGO 4, ILL.
HOUSTON 2, TEX. • NEW YORK 7, N.Y.



Western Foundation Corp. and Spencer, White & Prentis, Inc., contractors for Union Electric Light & Power Co. plant.



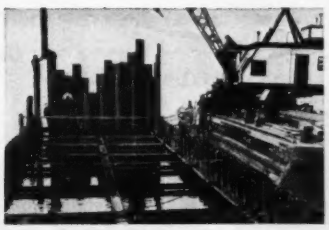
The Subterrano Corp., contractors for Owl's Head Sewage Treatment Works Project, Brooklyn.



Daniel O'Connell's Sons, Inc., contractors for Holyoke Water Power Co. new plant, Holyoke, Mass.



Fish Constructors and Oklahoma Contracting Corp. contractors for Transcontinental Gas Pipe Line Project, New York section.



Frederick Snare Corp., contracting engineers for Lawrence-Atlantic Beach Bridge, Nassau County, New York.

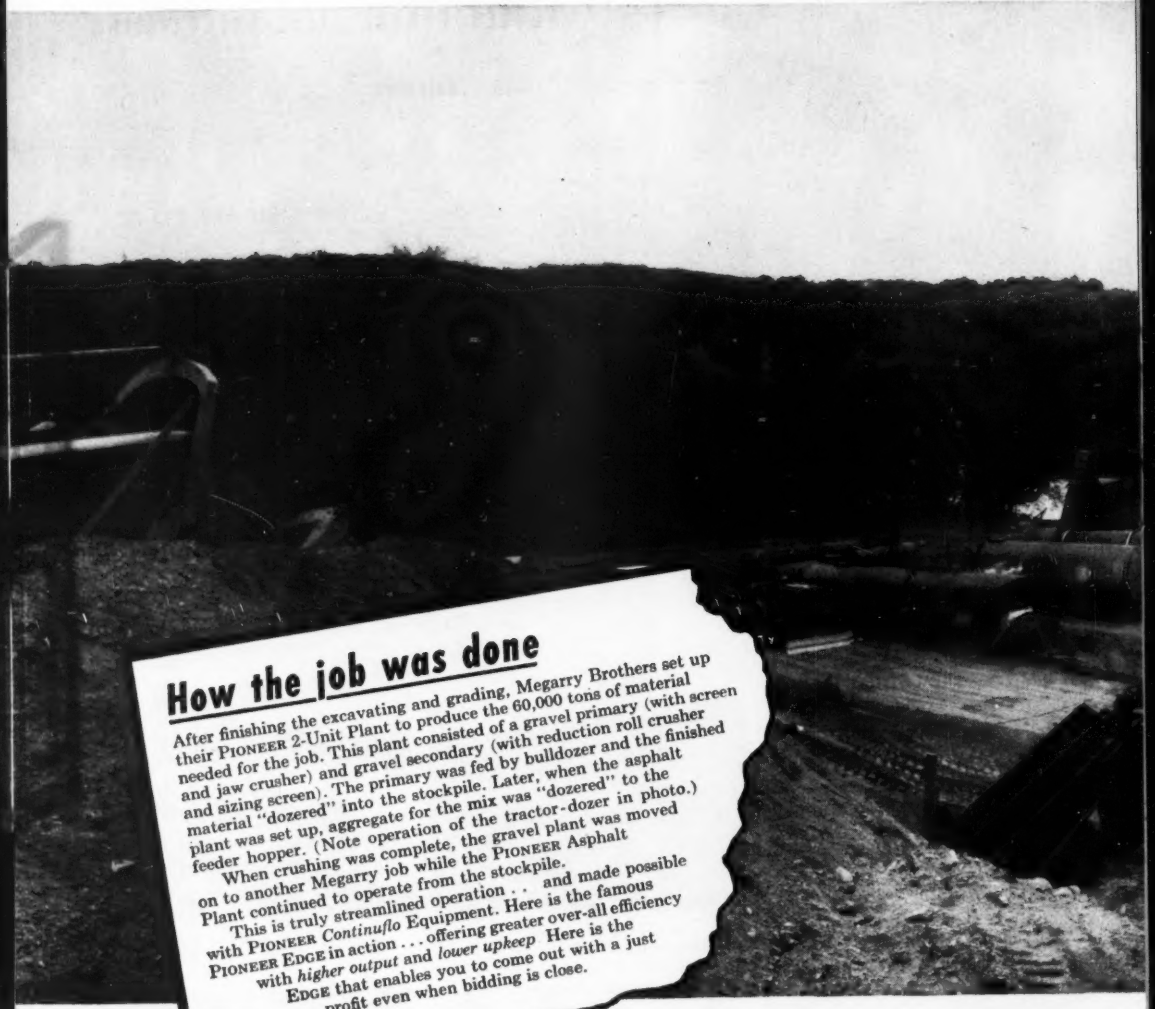


Morrison-Knudsen Co., Inc., contractors and engineers for Jones & Laughlin Steel Corp. plant expansion, Pittsburgh.

RENT STEEL-SHEET PILING ALL LENGTHS • ALL SECTIONS FASTER FROM FOSTER

When you've more jobs ahead...

that Pioneer Edge



How the job was done

After finishing the excavating and grading, Megarry Brothers set up their PIONEER 2-Unit Plant to produce the 60,000 tons of material needed for the job. This plant consisted of a gravel primary (with screen and jaw crusher) and gravel secondary (with reduction roll crusher and sizing screen). The primary was fed by bulldozer and the finished material "dozered" into the stockpile. Later, when the asphalt plant was set up, aggregate for the mix was "dozered" to the feeder hopper. (Note operation of the tractor-dozer in photo.)

When crushing was complete, the gravel plant was moved on to another Megarry job while the PIONEER Asphalt Plant continued to operate from the stockpile.

This is truly streamlined operation . . and made possible with PIONEER *Continuflo* Equipment. Here is the famous PIONEER EDGE in action . . . offering greater over-all efficiency with *higher output* and *lower upkeep* Here is the EDGE that enables you to come out with a just profit even when bidding is close.

BUY BOTH!
HIGHER OUTPUT
LOWER UPKEEP

Pioneer

Continuflo EQUIPMENT

gets you there sooner

Megarry completes job 2 months early

Completing the job ahead of schedule is routine for Megarry Brothers of St. Cloud, Minnesota.

Take, for example, this $256,946.00 job on Minnesota State Highway 7 between Excelsior and Minneapolis. This 12.2 mile stretch called for 16,578 cubic feet of excavation and placing 35,171 tons of gravel base. The resulting 499,420 square yards of surface required 50,686 tons of bituminous mix. Finally, 2,136 tons of seal coat aggregate were placed on top.

Work began October 1950, and after a winter layover, was resumed the following April. The schedule called for completion September 1, 1951, but Megarry Brothers had the PIONEER EDGE on their side. Result: the job was finished in July, *two months early*. Again, the built-in ruggedness and extra capacity of PIONEER equipment had brought substantial savings to a wide-awake contractor.



Megarry Brothers choose Pioneer

● Megarry Brothers have found that dependable equipment is the key to efficient performance on a construction job. Here is some of the PIONEER equipment they own and operate.

- 1 Model 101 Portable Asphalt Plant consisting of a drier, dust collector, and combination gradation-mixing unit.
- 1 Auxiliary drier.
- 2 2-Unit Portable Plants each consisting of a 150 PG Primary and 140S Secondary.
- 2 40 V Duplex Portable Crushing Plants.
- 1 38 V Duplex Portable Crushing Plant.
- 1 305 W Washing Plant.

PIONEER ENGINEERING WORKS

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(Subsidiary of Poor & Company • Chicago)

● Please send me information on the equipment checked.

☐ BITUMINOUS PLANTS	☐ ROLL CRUSHERS	☐ MECHANICAL FEEDERS
☐ GRAVEL PLANTS	☐ WASHING PLANTS	☐ VIBRATING SCREENS
☐ ROCK PLANTS	☐ APRON FEEDERS	☐ BUZZER SCREENS (LIGHT DUTY)
☐ JAW CRUSHERS	☐ ORO FEEDERS	☐ CONTINUFLO CONVEYORS

*Name*_____

*Company*_____

*Address*_____

*City*_____ *Zone*____ *State*_____



"No fat," said Sprat

—*but he wasn't mixing concrete!*

The particular degree of "fattiness" which proper air-entrainment imparts to concrete mixtures to produce rich, smooth-working plasticity cannot always be obtained with air-entraining cements. In many instances the harsh, bony leanness of the "Jack Sprat" mixes developed by locally available materials cannot be adequately "fattened" by the rigorously standardized air-entraining cements. Only by adding the necessary amount of one of the well-known air-entraining agents to the mix can it produce the creamy fat required for adequate air-entrainment.

It's another case of the necessity for avoiding an arbitrary diet and feeding the individual what is best for his proper development.

Fortunately, the diet provided by air-entraining cement develops enough fat for most concrete mixes to "get by," but only by studying each set of conditions and furnishing just the right diet of air-entraining agent can the best results be obtained from any concrete mixture. The excellent results obtained are well worth the effort. If, however, you are *certain* the conditions are right for using a manufactured air-entraining cement, there's none better than Marquette Air-Entraining Cement.

If you have any problems or questions on the use and mixing of air entrained concrete, the Marquette Service Engineer will be glad to help and advise you—contact any Marquette office.

Correct air entrainment prevents the kind of deterioration shown on this pavement slab. Always be *sure* your mix will produce the air-entrained concrete the job requires.

Marquette Cements

Marquette Cement

MANUFACTURING COMPANY

SALES OFFICES: Chicago • St. Louis • Memphis • Jackson, Miss. • **PLANTS:** Oglesby, Ill. Des Moines, Ia. • Cape Girardeau, Mo. • Nashville, Tenn. • Cowan, Tenn. • Brandon, Miss.

PORTLAND • HIGH EARLY STRENGTH • AIR ENTRAINING • MASONRY

GULF PRODUCTS *and* FINE SERVICE

keep equipment rolling

on Long Island Parkway Project



Hendrickson Bros., Valley Stream, Long Island, have the contract for a sizeable portion of the work now under way on the Northern-Sagtikos Section of the Long Island Parkway System. The Hendrickson contract calls for 4.02 miles of Parkway grading, 4.76 miles of access road grading, and 1.26 miles of paving. The Northern-Sagtikos State Parkway and the Captree State Parkway are the final links in the chain of the Long Island State Parkway System.

"WE have used Gulf lubricants and fuels for over a quarter of a century because of their outstanding quality and their delivery to us when and where needed," says Mr. A. J. Hendrickson, President, Hendrickson Bros., Valley Stream, Long Island. "On this Parkway Project, we are getting the same fine equipment performance that we expect with Gulf products."

Gulf Quality Products and That Good Gulf Service team up to help many leading contractors do a faster, more profitable job.

Gulf lubricants provide better protection against wear, and contribute to extra hours of trouble-free operation.

Gulf gasolines and Diesel fuels are clean burning, have low carbon content, and contribute to maximum engine power and efficiency.

Gulf quality products and fine service are quickly available to you through more than 1400 warehouses in 31 states from Maine to New Mexico. Gulf Oil Corporation · Gulf Refining Company, Gulf Building, Pittsburgh 30, Pa.

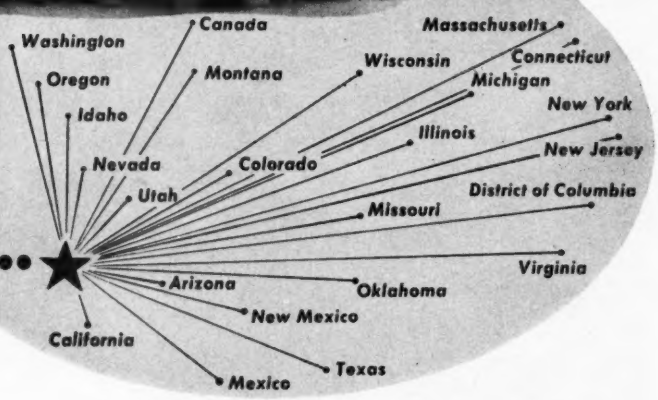
GULF



STANDARD
SM
ASPHALT PLANT

Made in California

used in...



An asphalt plant so good it's making money for contractors throughout the continent – that's the new STANDARD SM! Actual field experience – North, South, East, and West – has proved the SM to be *outstanding* for economy and dependability. It's the contractors' "work-without-worry" sweetheart.

AMERICA'S MOST MODERN ASPHALT PLANT • Roller bearing equipped • Twin-shaft mixer with patented sectionalized lining for easier, more economical replacement • Vertical hot elevator to cut friction and vibration • Fully dust-sealed construction throughout • New easy motion control levers at operator's station to reduce fatigue factor • Individual electric motor drives • Manual or fully automatic weighing • Pressurized oil heating system • All parts easily accessible • Clean, straight-line design for elimination of vibration • Completely synchronized flow • Unit-built for easy erection, dismantling and transportation.

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STANDARD STEEL CORPORATION

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Ramset cuts costs again with new Tru-Set Fasteners



"Red-Tip Pilot" Line, at reduced prices, leads the way to still greater economies in steel and concrete fastenings . . .

"Better than ever" say building contractors, about the newly developed RAMSET® Tru-Set Fasteners. "They set straight as an arrow and slick as a whistle. With that Red-Tip Pilot and those reduced prices, we'll stick to RAMSET for our fastening work in steel and concrete, and wherever else we can use it."

Lower prices on this latest technological development are gained from the new design and greatly increased sales volume. Then, a close-to-perfect percentage of accurately-seated fasteners results from the elasticized Red-Tip Pilot, which guides the fastener *straight* through the barrel into the work. For construction fastenings, nothing sets like RAMSET.

Fasten 15/1 Faster with RAMSET SYSTEM

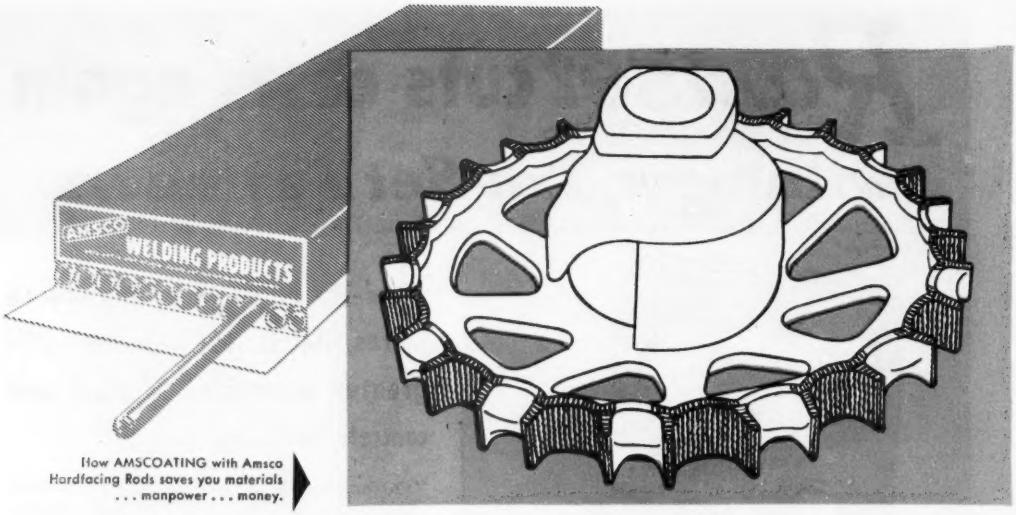
You beat the time by 15 to 1 for most fastening jobs by using RAMSET SYSTEM instead of old-fashioned methods. If you are not already profiting from these time-saving, money-saving advantages, ask for demonstration. Our nation-wide network of capable dealers provides fast, on-the-job service and suggestions. Take a moment now, to ask for details.

Ramset Fasteners, Inc.

Pioneer in powder-actuated fastening

12117 BEREA ROAD • CLEVELAND 11, OHIO





How AMSCOATING with Amsco Hardfacing Rods saves you materials . . . manpower . . . money.

These teeth take bites out of repair costs!

AMSCOATING can make old Tractor Drive Sprockets last 3 times longer than new.

Here's another way to beat the high cost of replacements, down-time and maintenance . . . AMSCOATING the teeth on Tractor Drive Sprockets. Time after time service records have shown that AMSCOATING of sprockets results in these dollar-saving advantages:

1. ***On an average — 3 times the service life of a new, unhardfaced sprocket.***
2. ***2 out of 3 sprocket changes completely eliminated . . . far less down-time, less maintenance . . . more equipment out of the shop and on the job.***

To top it off, sprocket replacements can practically be eliminated. An AMSCOATED sprocket can be reclaimed over and over again . . . *at about half the cost of a new one!*

Get all the facts on how to make these big savings . . . write today for instruction sheet on AMSCOATING sprockets, and the name of your nearest AMSCO Distributor.

AMSCOATING...stands for control of wear by Hardfacing...

Hardfacing rods—and recommendations for their use—are as sound as the manufacturer who makes them. AMSCO has been fighting wear for a half-century—first with Manganese Steel, and later with AMSCO Hardfacing Products.

If you have a problem of wear caused by impact, abrasion, heat or corrosion . . .

Find out how AMSCOATING can save you materials . . . manpower . . . money!

AMSCOATING

THE RIGHT WAY TO SAY HARDFACING

AMERICAN Brake Shoe COMPANY

AMERICAN MANGANESE STEEL DIVISION

385 EAST 14th STREET • CHICAGO HEIGHTS, ILL.

Other Plants: New Castle, Del., Denver, Oakland, Cal., Los Angeles, St. Louis. In Canada: Joliette Steel Division, Joliette, Que.
Amsco Welding Products distributed in Canada by Canadian Liquid Air Co., Ltd.

an ACCO product



The BRAND is mighty important

● This HAZARD brand on wire rope got started in 1846. It's a top brand today not because it goes back 106 years but because Hazard wire rope has kept on improving.

Hazard research and engineering has built more hours of useful work into ropes that carry this brand name. It has experimented with metals and alloys and every known lay. It is working harder than ever today improving the ropes that bear its name.

Hazard's especially proud of its LAY-SET Preformed WIRE ROPE. You can tell it by the green strand. It lasts longer and costs less to use.

ACCO

TRADE MARK

HAZARD WIRE ROPE DIVISION
AMERICAN CHAIN & CABLE

Wilkes-Barre, Pa., Chicago, Denver, Houston, Los Angeles, New York, Odessa, Tex., Philadelphia, Pittsburgh, San Francisco, Bridgeport, Conn.

makers of ACCO Registered WIRE ROPE · SLINGS

BIG EQUIPMENT



Engines 275 to 450 h.p.

LeTourneau 34 m.p.h. "A" TOURNAPULL

- Custom-built...capacity from 27 to 42 cu. yds. (35 to 50 tons)
- Speeds to 34 m.p.h.
- 275 to 450 h.p. engines
- 90° turns in less than half overall length
- Positive electric power steer
- Power-proportional differential
- Constant-mesh transmission with torque converter, or sliding gear transmission
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- 30.00 x 33, 40-ply low-pressure tires

LETOURNEAU LET EQUIPMENT

Ask your LeTourneau Distributor to help your next big yardage job with

FOR BIG JOBS



Capacity
27 to 42 yds.

Scraper easily interchangeable with **BIG** *haulers*

35 to 50-ton rear-dump
TOURNAROCKER



Steel grid reinforced bowl . . . low rear entry . . . front-wheel drive . . . fast, clear-over-the-bank dump . . . eliminates frame, spring, hydraulic troubles.

27 to 40-yd. bottom-dump
TOURNAHOPPER



Power-controlled dump . . . big top opening . . . clam-shell-type gates lift for high clearance, open same width as top to pass rocks and stumps.

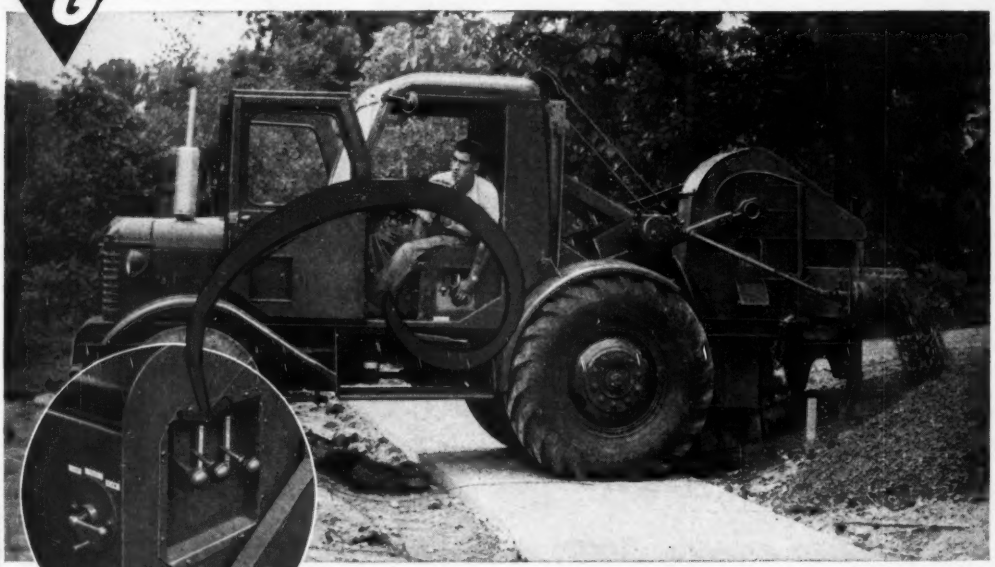
Tournarocker, Tournahopper – Trademark
Tournapull – Trademark Reg. U. S. Pat. Off. AG-4-G

you estimate
"A" Tournapulls

R. G. LeTOURNEAU, INC.
Peoria, Illinois

Barber-Greene

Runabout SERVICE DITCHER



250818

850321

The Hydra-Crowd — hydraulic transmission of power to the driving wheels — allows the operator of the Runabout, with a twist of the wrist, to keep it going at top digging efficiency through varying soil conditions.

with HYDRA-CROWD

finger-tip hydraulic control of crowding speed independent of bucket line speed

The Model 705-A Runabout now features the Hydra-Crowd, which provides an infinite range of crowding speeds from 0 to 16 f.p.m., independent of bucket line speed. With its 15 m.p.h. road speed and Vertical Boom milling action — and new Hydra-Crowd control — the Runabout combines mobility and digging efficiency to make possible lowest cost per foot of trench in all digging conditions the year around.

203

SEND FOR BULLETIN!

Send for Bulletin 705-A which describes completely all the advantages you gain when you use a Model 705-A Runabout Service Ditcher.

Outstanding Runabout Performance Features

- Year around operation
- 5½", 7½", 10½" cutting widths down to 48" deep
- 15 m.p.h. road speed
- Control of digging from cab or ground
- Fastest digging in everything from loam to coral rock
- Instant stop—quick reverse
- Digs clean trench—no ramp to be dug by hand
- One-man operation

Barber-Greene, Aurora, Illinois



THIS IS THE DIESEL

for any job from 32 H.P. up

MAYBE this headline surprises you, but it's a fact. General Motors has made it possible to have Diesel power in places where it was never used before—even on jobs requiring as little as 32 horsepower.

The reason is that GM engineers have compressed Diesel power into a smaller, lighter weight engine that provides Diesel economy and Diesel efficiency without sacrificing ruggedness. This sturdy 2-cycle Diesel fits almost anywhere a gasoline engine does—*and gets more work done faster, easier and cheaper.*

It is simple to operate. It starts quickly. It burns fewer gallons of safer, lower-cost fuel. It takes less time out for servicing. And it costs less to maintain than either gasoline or other Diesel engines.

You can have this thrifty, hard-working Diesel in more than 750 different kinds of equipment built by over 150 manufacturers. Write us for the list. And ask your GM Diesel dealer to show you the savings this Diesel can make in *your* kind of operation.





DETROIT DIESEL
ENGINE DIVISION
GENERAL MOTORS • DETROIT 28, MICHIGAN

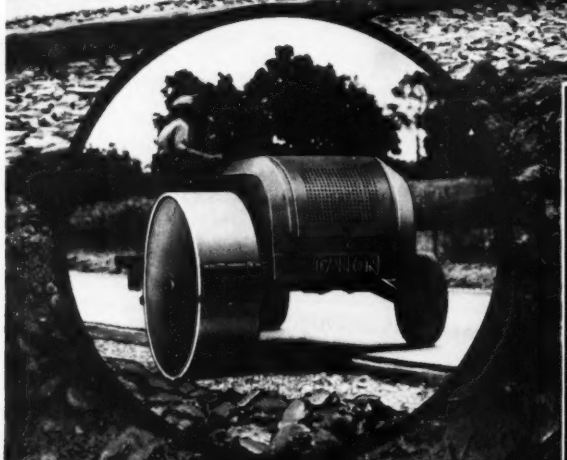
GM
GENERAL MOTORS
DIESEL POWER

Single Engines...32 to 275 H.P. Multiple Units...Up to 800 H.P.

GALION TRENCH ROLLER

SIMPLIFIES ROAD WIDENING JOBS





GALION — THE ORIGINAL

Galion originated the trench-type roller - - and is now the first to offer a completely new and improved design.

FEATURES

- Hydraulically controlled dual steering wheels.
- Adjusting and steering wheels travel on pavement.
- Works 25" below to 6" above road surface - - adjustment hydraulically controlled.
- Large diameter compression roll.
- Rugged, constant-mesh transmission and spur gear final drive.
- Powerful engine completely enclosed under housing.

GALION

ESTABLISHED 1907 **MOTOR GRADERS • ROLLERS**

THE GALION IRON WORKS & MFG. CO., General and Export Offices — Galion, Ohio, U. S. A.
Cable address: GALIONIRON, Galion, Ohio

the Man said:

"Give me an easy loading trailer...and I'll show you a profitable hauling job..."









Shown here: Loading an 80-D Northwest the easy Talbert way

for example: The TALBERT Removable Gooseneck* Trailer

- Front end loading—no rear bridge, short boards, minimum blocking, etc.
- Light-weight Removable Gooseneck*—no moving parts.
- Easy, safe, one-man operation.
- Large "production-priced" tires—interchangeable with tractor tires.
- Spring tandem suspension—for high road speeds.
- Minimum empty weight—maximum payload.



THE TALBERT CONSTRUCTION EQUIPMENT CO., of Lyons, Illinois manufactures a complete line of low-bed trailers and dump semi-trailers

THE TALBERT-WAY IS THE EASY WAY

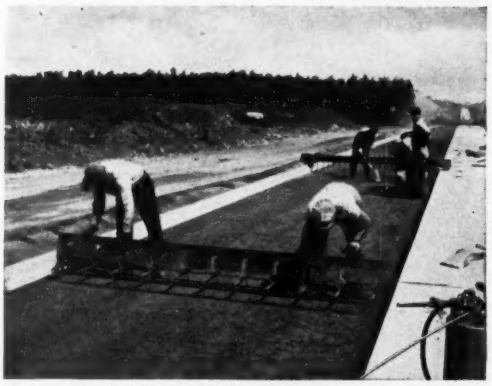
Four-Lane Road in Pennsylvania Coal Region



Bethlehem Reinforcing Bars used in railroad bridge that spans 48 ft of highway. Notice lane of completed pavement in left background.

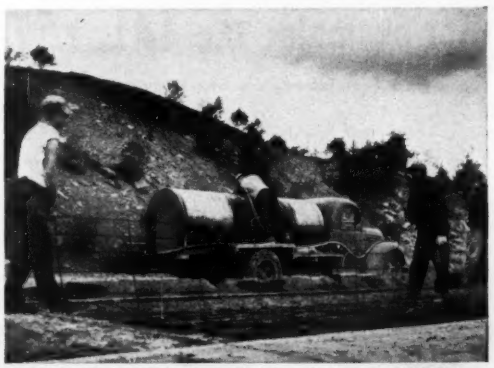


Checking the blueprints. *Left to right:* J. D. Montgomery, superintendent for F. D. Kessler, Inc.; Thomas Glaudel, junior inspector, and Adolph Kerewicz, resident engineer, both of Pennsylvania Dept. of Highways.



Two men place Bethlehem Dowel Unit quickly and easily. Unit is designed to help solve the load-transfer problems caused by heavy wheel loads.

Continuing its road-modernization program, the Pennsylvania Department of Highways recently authorized relocation of Route 29 between Hazleton and Tamaqua. The new road is four lanes wide and relatively free of turns. F. D. Kessler, Inc., Northumberland, Pa., was the contractor for the 3¼-mile section pictured here. Bethlehem furnished bar mats, dowel units and reinforcing steel.



Bethlehem Hinged Bar Mat is handled by only two men. With bottom section placed, hinged portion needs but slight push to fall into position.

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. *Export Distributor:* Bethlehem Steel Export Corporation

STEEL FOR HIGHWAYS

Dowel Units • Reinforcing Bars • Bar Mats • Guard Rail
Guard Rail Posts • Wire Rope and Strand • Pipe
Hollow Drill Steel • Spikes • Bolts and Nuts
Timber Bridge Hardware • Tie-Rods
Sheet- and H-Piling • Fabricated Structural Steel

BETHLEHEM STEEL



UNDER WAY...
Penrose Avenue Bridge, Philadelphia

Construction view of the 56 Monotube-supported piers for this important new bridge over the Schuylkill River—a joint project of the City of Philadelphia and the State of Pennsylvania. Design Engineers: Modjeski and Masters; General Contractor: Foley Brothers, Inc.; Pile Driving Contractor: Fehlhaber Pile Co.



MONOTUBES...

best for holding structures up —and holding costs down!

ALMOST 38 miles of Monotube piles, from 26 to 82 feet long, support the 56 piers (above) for the new Penrose Avenue Bridge, Philadelphia. It's one of the many types of construction where Monotubes are again and again the preferred choice. For with Monotubes, engineers and contractors always stand to gain important advantages . . .

First, Monotube taper-flute, *cold-rolled* construction means *extra* strength, extra structural value that can be utilized in designing for heavy loads, often requiring fewer piles. Moreover, their tapered tubular design makes inspection before concreting rapid and easy for positive assurance of condition after installation.

Secondly, you simply can't match light weight Monotubes for ease of handling, locating and driving . . . nor for simplified field splicing with fast cut-off and minimum waste.

On job after job it adds up to sound foundations with a new low in installation time and cost. Get all the facts on why these gains are possible with Monotubes. Just write to The Union Metal Manufacturing Co., Canton 5, Ohio.

UNION METAL
Monotube Foundation Piles

The plain hard facts prove you save with

CHEVROLET Advance-Design TRUCKS

FACT No. 1

MORE TRUCK FOR LESS MONEY

Compare the list price of a Chevrolet truck with that of any other truck built to handle the same payloads. You'll find the Chevrolet truck lists for less, yet brings you ruggedness, stamina and great truck features you won't find in many trucks costing much more.

FACT No. 2

ROCK-BOTTOM OPERATING COSTS

Dollar-for-dollar comparisons prove that Chevrolet trucks cost least to own and maintain. Valve-in-Head economy saves on gas, in the 105-h.p. Loadmaster or 92-h.p. Thriftmaster engines. Four-way engine lubrication reduces wear and oil costs. Rugged construction means long life.

FACT No. 3

ENGINEERED FOR YOUR LOADS

Every Chevrolet truck is *factory-matched* to payload and service requirements. You don't have to buy more truck—or settle for less truck—than you need for your loads. Frame, axles, springs, body, brakes and power are balanced for the job.

FACT No. 4

LOWER, SLOWER DEPRECIATION

Records show that Chevrolet trucks traditionally bring more money at resale or trade-in than many other makes. Chevrolet's market value stays up because the value stays *in!* Here is important and convincing proof that Chevrolet is the best truck buy!



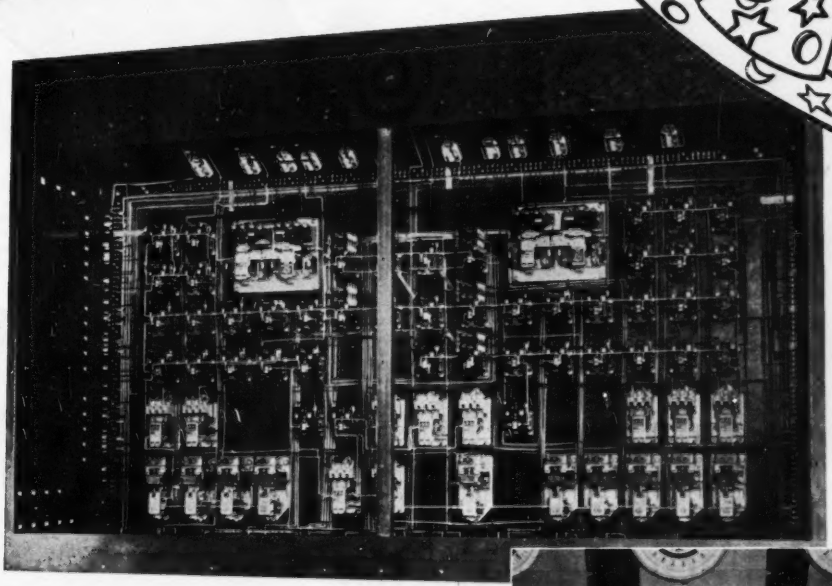
CHEVROLET ADVANCE-DESIGN TRUCK FEATURES

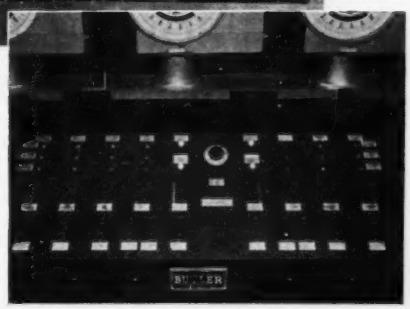
TWO GREAT VALVE-IN-HEAD ENGINES—the 105-h.p. Loadmaster or the 92-h.p. Thriftmaster—to give you greater power per gallon, lower cost per load • POWER-JET CARBURETOR—for smooth, quick acceleration response • DIAPHRAGM SPRING CLUTCH—for easy-action engagement • SYNCHRO-MESH TRANSMISSION—for fast, smooth shifting • HYPOID REAR AXLE—for dependability and long life • TORQUE-ACTION BRAKES—on light-duty models • PROVED DEPENDABLE DOUBLE-ARTICULATED BRAKES—on medium-duty models • TWIN-ACTION REAR BRAKES—on heavy-duty models • DUAL-SHOE PARKING BRAKE—for greater holding ability on heavy-duty models • CAB SEAT—with double-deck springs for complete riding comfort • VENTI-PANES—for improved cab ventilation • WIDE-BASE WHEELS—for increased tire mileage • BALL-TYPE STEERING—for easier handling • UNIT-DESIGNED BODIES—for greater load protection • ADVANCE-DESIGN STYLING—for increased comfort and modern appearance.

CHEVROLET DIVISION OF GENERAL MOTORS, DETROIT 2, MICHIGAN



The Electrical WIZARD of WAUKESHA





How completely automatic and fool-proof can a Central Mixing Plant get?

BUTLER has the answer in the control system built for the BUTLER Central Mixing Plant destined to pour concrete for the gigantic H-Bomb Plant.

Complex? Yes — vastly. Just glance at the wiring. But it's fool-proof and positive in its operational sequence as the sun. So completely interlocked that it rejects human mistakes, this BUTLER wizard batches 7 materials including water with split-pound accuracy in record breaking time.

Need for such equipment does not arise every day. But the point is this: that BUTLER Engineers can conquer a problem of such complexity is sound evidence of exceptional experience and ability. And that pays off in an exceptional profit for you.

So whether it's a Central or a Ready Mix Plant, a Roadbuilders or a Concrete Products Plant you have in mind — consult the BUTLER ENGINEER.

BUTLER
BIN COMPANY
949 Blackstone Avenue
Waukesha, Wisconsin



*Overcured Sections — present every 30′ to 40′ in all belts made by the flat press method. Only Rotocuring (continuous, non-stop curing) eliminates this major cause of belt failures.

Here Lies a Good Conveyor Belt ...killed by OCS*

—BWH ROTOCURE prevents these fatalities — look for it in the belts you buy

Press overlaps, inherent in belts cured by flat press methods, are a primary cause of early belt failure. The overlaps result in overcured segments 2″ to 4″ wide across the entire belt because vulcanization is *not* continuous. These 2″ to 4″ segments are *double cured* — and *double curing weakens the structure!*

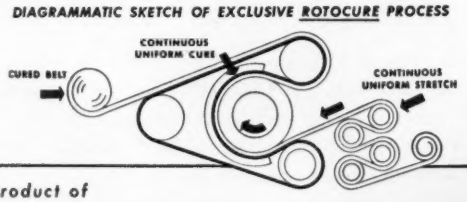
When you buy a BWH conveyor belt made by the *continuous* ROTOCURE process of vulcanization you obtain a *uniformly strong* belt *overall.* The weakened segments due to overlapping that sabotage operations and inflate belting costs are completely eliminated. With continuous, endless vulcanization you'll be ahead four ways:

1. In increased belt flex life — as much as 40%
2. In elimination of mechanical distortion at the press ends
3. In constant, uniform stretch
4. In uniform, abrasion-resistant covers

These characteristics of BWH Conveyor Belts mean minimum belt maintenance costs, longer belt life and appreciable per ton savings in the cost of what you convey! Ask your BWH distributor to show you how these highly serviceable belts can help you. Or write us direct.**

**Ask him also about BWH Rotocured Transmission Belts. Because they permit operation at lower tensions, you are assured of longest possible belt life.

DIAGRAMMATIC SKETCH OF EXCLUSIVE ROTOCURE PROCESS



BWH
DEPENDABLE RUGGEDNESS

Another Quality Product of

BOSTON WOVEN HOSE & RUBBER COMPANY

Distributors in all Principal Cities

PLANT: CAMBRIDGE, MASS. • P.O. BOX 1071, BOSTON 3, MASS., U. S. A.
WAREHOUSE STOCK, 111 NORTH CANAL ST., CHICAGO, ILLINOIS

We Engineered the Mechanical Advantages Of Big Shovels into the Dempster-Diggster

The Dempster-Diggster's ability to dig hard and stratified materials without shooting is shown in photo at right. Note ample loading clearance. Dempster-Diggster, shown at work in Florence, Ala., is the Type GRD, Model 100.





This Dempster-Diggster, shown at work in Creighton, Pa., is also loading hard and stratified material without shooting. It is the Type CR, Model 100.



The Type GRD, Model 100-HL is shown above loading Hopper Bottom car, height of which is 10'8" from rail to top of car.

Simultaneous Independent Hydraulic Crowding and Hoisting, Variable Crowd Action at Any Dipper Position and Changeable Buckets are engineered into the Dempster-Diggster. Many of the present Dempster-Diggster owners were at one time in the same position you may be in today. They needed front end loaders, but they also needed shovels that could dig out 15 to 18 foot banks. The versatility of the Dempster-Diggster, plus its economical and efficient operation, left them with only one choice. In the first place, the Dempster-Diggster can do anything a conventional front end loader can do—and do it faster and at less cost! Second, on big jobs the Dempster-Diggster is without equal for working in tight places. The Dempster-Diggster is available in either of two types of traction—pneumatic (Type GRD) or crawler (Type CR). Both types are supplied in two models—the Standard (Model 100) or High Lift (Model 100-HL). Our new catalog No. 1032, with over 35 illustrations and complete specifications, shows how this revolutionary shovel can cut your costs tremendously. For your copy fill in the attached coupon and mail today!

DEMPSTER DIGGSTER
TRADE MARK

Please send me, without obligation, your Dempster-Diggster Catalog #1032.

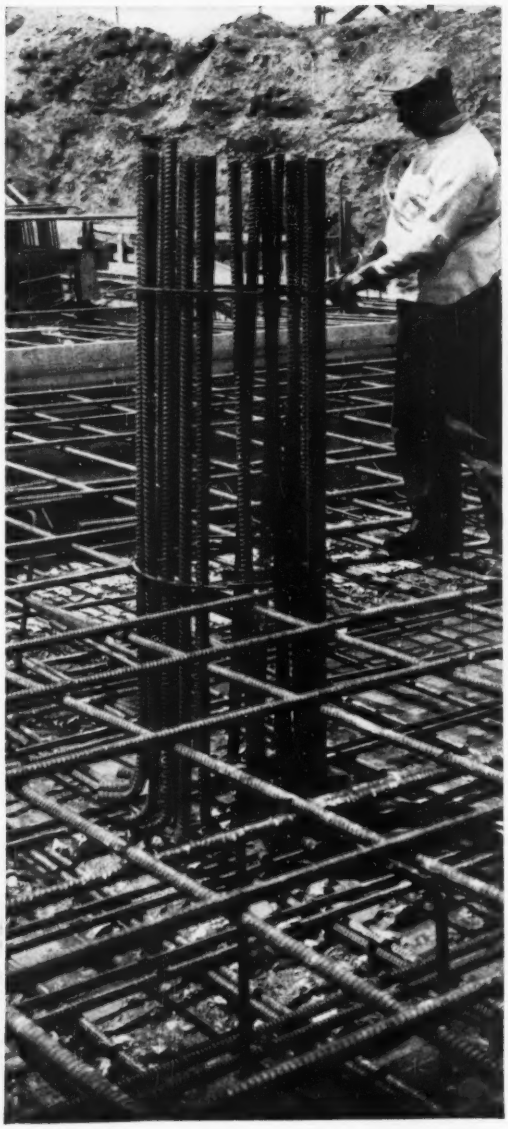
Name_____

Address_____

City_____ State_____

DEMPSTER BROTHERS, 332 Shea Bldg., Knoxville 17, Tennessee

CONSTRUCTIVE



INLAND HI-BOND

The deep, reversed, double-helical ribs of Hi-Bond reinforcing bars provide a mechanical grip which gives maximum bond in concrete, thus permitting greater use of steel's potential strength in concrete construction. It also improves transfer of stresses, crack control and resistance to slip . . . advantages that will make possible higher design stresses and thereby lower construction costs. Hi-Bond meets standards set up by ASTM A 305.



INLAND STRUCTURAL SHAPES AND PLATES

Inland's service on structurals and plates meets the most exacting requirements of today's construction and heavy equipment industries . . . in dependability of product and engineering cooperation with users. I-Beams, Angles, Channels and other standard structural sections, in a wide range of sizes, are rolled to all the standard specifications . . . also in Inland Copper-Alloy for increased resistance to atmosphere corrosion.

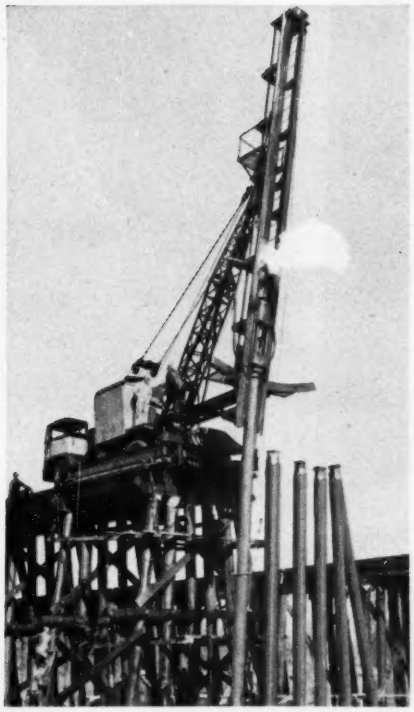
INLAND

IDEAS



INLAND 4-WAY SAFETY PLATE

On scores of products, on new bridges, in new buildings—and for replacement, maintenance and repair—this scientifically designed steel floor plate, with its exclusive raised lug pattern, provides positive traction in every direction. Tough, durable, strong, it stands up under heavy loads and hard wear. It can be readily sheared, welded, punched, flame cut, and shaped. It has no pores, no cracks, absorbs no liquids and is easy to sweep. Comes in a wide variety of patterns and sizes. Write for Bulletin FI.



INLAND CREOSOTE OIL

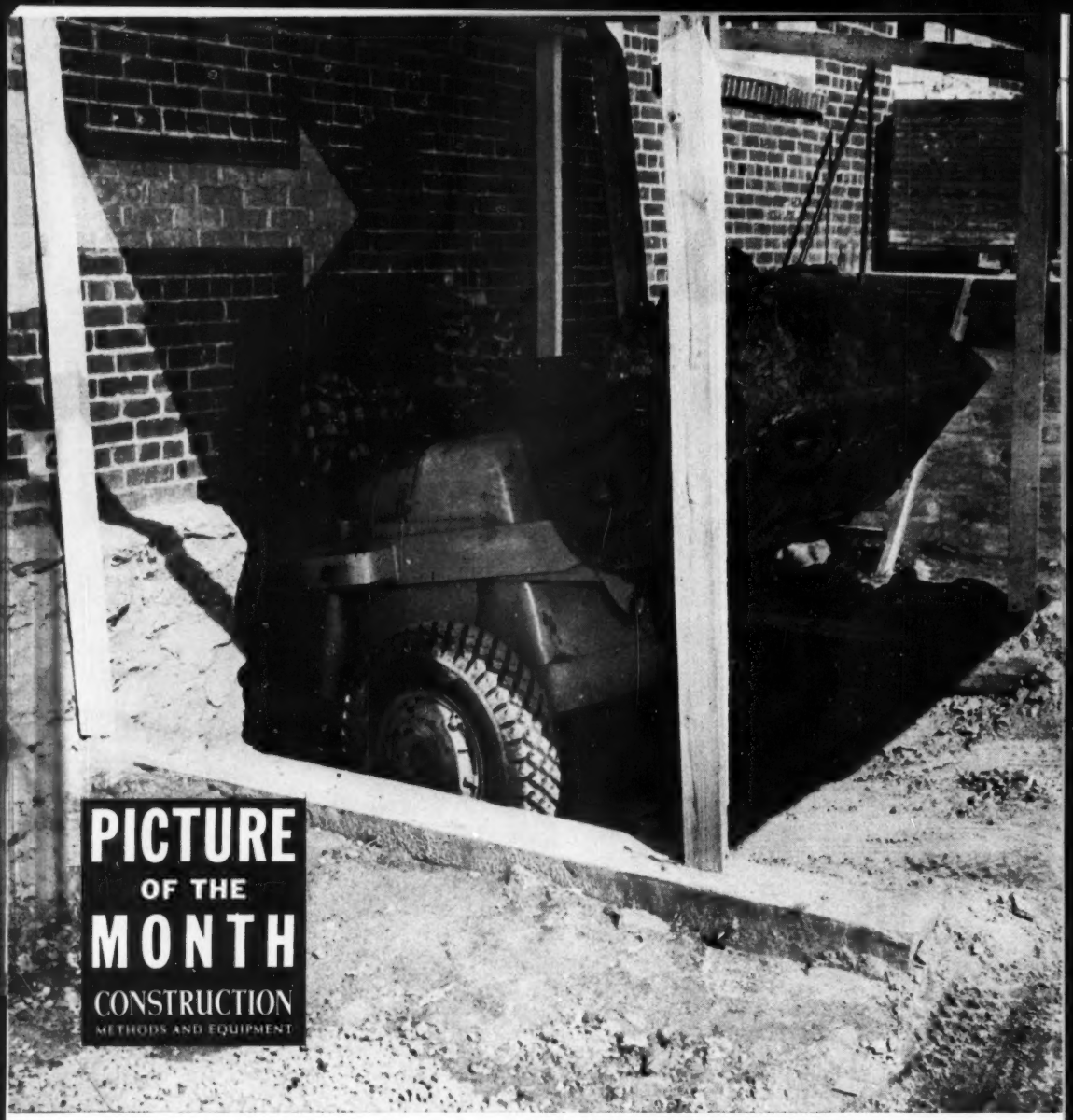
For better, longer-lasting preservation of timbers and wood piling. Inland-owned-and-operated coal mines, coke ovens and tar distillation equipment assure quality control at every step in production of Inland Creosote Oil. Its low benzol insoluble content of about 0.1% (American Wood Preservers Association specifications permit 0.5%) gives clean, deep-penetrating, longer lasting preservation.



INLAND SHEET PILING

Taking the punishment of driving and pulling—being driven, pulled and re-driven as many as 15 times—Inland Sheet Piling has been used and depended on by piling contractors for more than 25 years. Made with highly efficient interlocks for water retention, it gives excellent service on single and double wall cofferdams, cellular breakwaters, jetties, docks, bulkheads and retaining walls. Rolled from a special analysis steel, with the strength, toughness and uniformity to withstand extreme and continued stresses. Available with all necessary sheet piling accessories. In Inland Copper-Alloy, at slight additional cost. And Inland sheet piling specialists with broad experience are available to help you on sheet piling problems. Write for Booklet SP2.

INLAND STEEL COMPANY
38 S. Dearborn Street, Chicago 3, Illinois

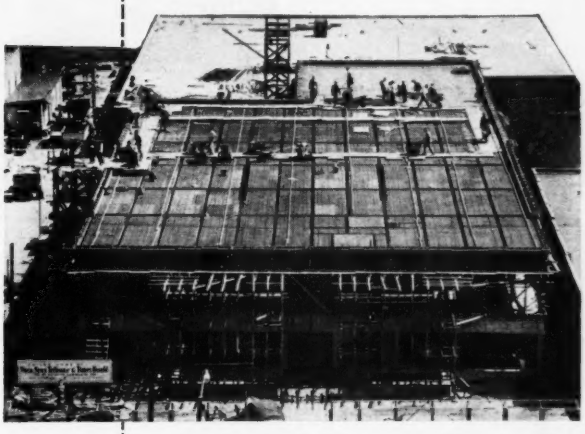


Working Under a Low Overhead

Loader becomes excavator in the deep south as a Hough Model HA Payloader brings up a bucket load of dirt excavated from underneath a cotton goods mill. When built many years ago, the mill had no usable basement—only 2 ft of ground clearance. That clearance is being increased to 9 ft for more storage space. To simplify excavation, a hole was broken through the brick wall, and now the Payloader rolls in and brings out the dirt. May the operator always remember to duck in time! The machine is owned and operated by the mill owner, The Russell Manufacturing Co., Alexander City, Ala. The Payloader handles a variety of jobs around the plant and in the adjacent town.

Texas contractor finds that

DURAPLASTIC* results in improved surface appearance...at no extra cost



Looks better . . . and it's more durable — All concrete in the NEWS-TRIBUNE and TIMES-HERALD building, Waco, Texas, was made with Duraplastic air-entraining cement.

THERE'S A GOOD REASON why the Moore Construction Company, Austin, Texas, used Atlas Duraplastic air-entraining portland cement for this building. R. B Moore, Jr., reports that with Duraplastic they get "a more homogeneous, honeycomb-free, plastic and workable concrete with less water bleeding."

That's why so many contractors are specifying Duraplastic cement today. Another reason is *durability*. Duraplastic-made concrete is fortified against the effect of freezing-thawing weather because air-entrainment minimizes bleeding and segregation.

YET DURAPLASTIC COSTS NO MORE

It sells at the same price as regular cement and requires no unusual changes in procedure. Complies with ASTM and Federal Specifications. For descriptive booklet, write Universal Atlas Cement Company (United States Steel Corporation Subsidiary), 100 Park Avenue, New York 17, N. Y.

OFFICES: *Albany, Birmingham, Boston, Chicago, Dayton, Kansas City, Minneapolis, New York, Philadelphia, Pittsburgh, St. Louis, Waco.*

*"*Duraplastic" is the registered trade mark of the air-entraining portland cement manufactured by Universal Atlas Cement Company*

ATLAS®

DURAPLASTIC

AIR-ENTRAINING PORTLAND CEMENT



CM-D-136

Makes Better Concrete at No Extra Cost

"THE THEATRE GUILD ON THE AIR"—*Sponsored by U. S. Steel Subsidiaries—Sunday Evenings—NBC Network*



Let's look through the album together . . .

Your Atlas representative carries with him these days an album of "machine gun" photos of many blasts. Each blast illustrates a point and serves as a reminder of the principles that lie behind good blasting.

The photos in this album help answer some of the questions at the right—all of them timely, interesting, and important today.

Why not write or phone for a date? Or, plan to spend a pleasant and profitable hour looking through the album together the next time your Atlas representative calls.



Does a column of explosives shoot instantaneously?

Is the point of initiation important?

Which is the best point of initiation to get complete confinement of the explosives gases?

When does detonation from *top* of the hole have distinct advantages?

Under what conditions does detonation from the *bottom* of the hole improve results greatly?

What improvements in control, fragmentation, and reduction of noise can be obtained by milli-second delay detonation?

How can milli-second delays be used to best advantage?

ATLAS EXPLOSIVES

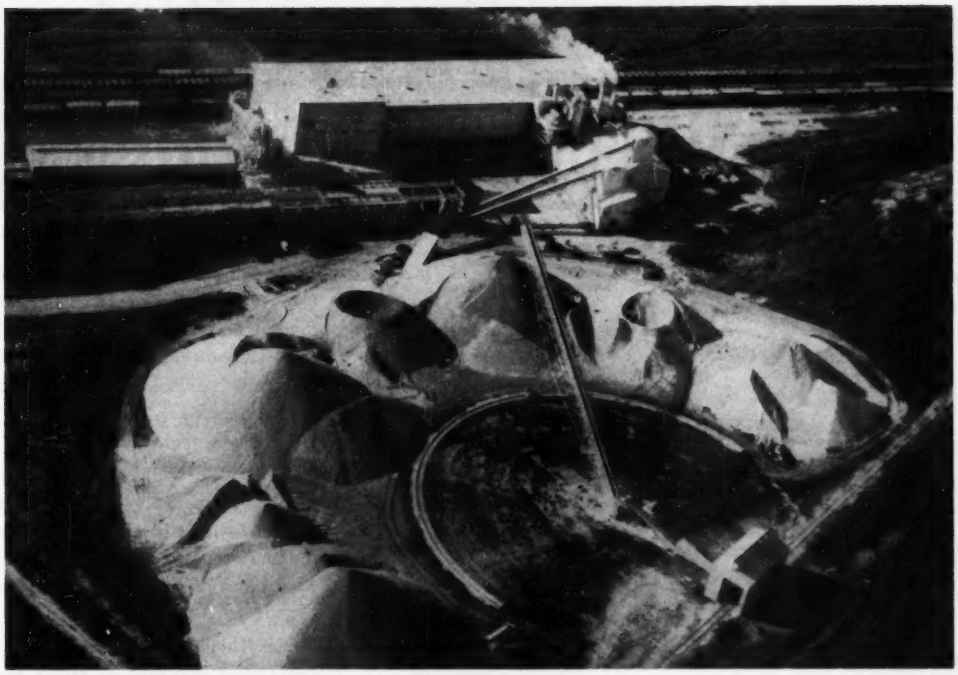
ATLAS

"Everything for Blasting"

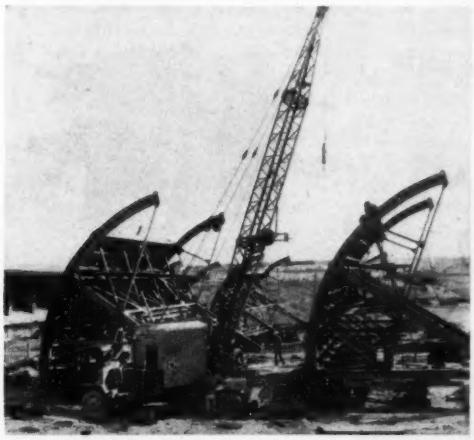
ATLAS POWDER COMPANY • WILMINGTON 99, DELAWARE

Offices in principal cities

Construction News in Pictures . . .



SEMICIRCULAR STOCKPILE — This could almost be the scene around the aggregate plant for a large concrete dam project. But it is a storage system for American Cyanamid Co. in Florida to handle phosphate rock. Rock arrives in hopper cars and is dumped on to a 36-in. belt running up a stacker 80 ft high. The stacker pivots over a full semicircle to permit piling of rock on appropriate piles. Directly under the storage piles are gate-controlled openings into a tunnel of reinforced concrete with conveyor belts. Grades of rock can be blended and the flow regulated by these gates. Transfer conveyors take the material to the plant. Design and construction was by American Cyanamid. The stacker was supplied by Jeffrey Manufacturing Co.



GATE-HANDLER — Morrison-Knudsen Co., Inc., assembles control gates for the spillway of the C. J. Strike Dam at Grandview, Idaho, with a 20-ton Lorain Moto-Crane equipped with a 50-ft boom. The $18,500,000 dam on the Snake River is 3,000 ft long, 120 ft high, of earth-fill construction with rock surface, 740 ft wide at the base and 20 ft wide at the top.



TANK CAR GOES BELOW GROUND — Contractor-owner W. E. Van Alstine of Fort Dodge, Iowa, is at the controls as his International TD-9 tractor and Bucyrus-Erie dozer cover over an old railroad car tank. The salvaged tank becomes an oil storage tank for the new Chicago Great Western passenger and freight station in Fort Dodge.

For Dependable Concrete Forming...

USE SUPERIOR CONCRETE ACCESSORIES



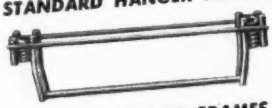
SNAP TIES



STANDARD HANGER FRAMES



STANDARD COIL TIES



SPECIAL HANGER FRAMES



CONE-FAST COIL TIES



ROD CLAMPS



PANEL LOCK BOLTS



DOVETAIL ANCHORS AND SLOT

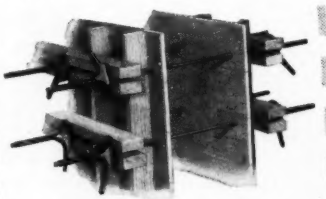


ADJUSTABLE SCREED CHAIRS

Here you see several of the many various types of Form Ties, Anchors and other concrete accessories which SUPERIOR'S many years of know-how and dependability have produced to meet rigid job specifications.

Every item in the SUPERIOR line is specifically designed to provide the most efficient forming method for ordinary foundations, engineering structures, watertight walls and architectural concrete.

When you plan form work, Superior's experienced engineers are always available to prepare suggested layouts of form work as well as complete estimates and quotations.







TILT LOCK CLAMPS

SUPERIOR CONCRETE ACCESSORIES, INC.
4110 Wrightwood Avenue, Chicago 39, Illinois
New York Office: 1775 Broadway, New York 19, N.Y.
Pacific Coast Office: 2151 Williams St., San Leandro, Calif.

Request a copy of our new catalog . . . it contains a valuable table for spacing studs, wales, and form ties.

Volume 34
Number 3

CONSTRUCTION
METHODS AND EQUIPMENT

MARCH
1952

Harold W. Richardson, Editor

See Here, Young Man

SO YOU ARE almost through with your civil engineering course and graduation is just around the corner. It's a great feeling isn't it? Sure is, especially with the whole country yammering for technically trained men. Yes, you've got the world by the tail on a down-hill pull.

If you have not already made up your mind as to what you want to tackle as your life's work, take a look at construction. Ah, there's a career for you that can't be beat for glamour, excitement and downright soul-tingling satisfaction in sense of accomplishments.

It's a he-man, hairy-chested business though. If you are a sissy, want ease and comfort and regular hours and want to stick close to the television set every night, stay away from construction. Get yourself a drafting stool instead, where you will get the seat of your pants shiny and no mud on your shoes.

You say you don't know much about construction? Sure, that's understandable, but almost all engineering colleges ignore construction—they're too hell-bent upon design courses. All too many of the good deans and professors who make up the curriculum fail to realize that construction is the end-product of civil engineering—a 39-billion-dollar product last year. We have several committees working on them though, and perhaps your sons will be able to learn something about construction as undergraduates.

Probably no contractors have been around talking to you about the construction world. Well, you see, our contractors aren't very smart when it comes to their own industry's relations. So they pass up opportunities to talk to you as a student.

What are your chances of advancement in construction? You probably will start out as a timekeeper, material checker, assistant job engineer, or even as a laborer. That's all right though, for your first step is to learn what it's all about. Then you may get to be a foreman running a gang, or you might be shifted into the estimating department or to other office duties.

Don't worry about those first few years. You're out to learn the construction business. And you will work up just as fast as you can grasp the intricacies of this fascinating business, perhaps to head up an office department or to superintendent and project manager. Contractors are fast realizing that technically trained men with a knowledge of the business are best for any type job whatever it may be. And, of course, there is always the possibility of stepping out in business for yourself.

What kind of an outfit should you try to hook up with? Large or small? Heavy, highway, or building? The choice is really a personal one, son, but opportunities are about equal all around. Small firms probably can give you a more diversified, more intimate experience. Large contractors, of course, can assign you to larger projects where you will get a world of experience, but perhaps along a more specialized line. The type of work a contractor prefers is not very important—take your choice.

In seeking a contractor connection you may run into some disappointments, for controls and defense mobilization have upset the industry somewhat. But keep at it, for when and if you do connect, you will find the effort worthwhile. Try to see the president or the big boss, if possible, of the contracting firm that interests you. Sure you may run into a few pompous offices where you can't get by the reception gal. But don't let that throw you, for such outfits don't deserve a hustling, ambitious fellow like you. The alert contractor will make it possible for you to talk with the right guy, and that's the kind of company you want to join anyway.

And when you get a job, throw yourself into it. Forget regular hours, don't worry about the next raise, just make up your mind to learn and learn—and learn some more. You can learn from the men on the job, from your superiors, but most of all you can learn by keeping your eyes open and your ears unplugged. Take an interest in everything going on.

Gradually, the whole conception of operating a successful construction business will dawn upon you. Apply your technical training and common sense and use your imagination and ingenuity. And that, plus experience, makes a good construction man.

Good luck, son. Hope to see you out on the job one of these days.

Rich

Tunneling Costs Drop Way Down

WANT TO SAVE 85% in the quantity of steel necessary to support your tunnel roof? Want to cut the time required for each advance? Want to make additional savings in the amount of rock removed and concrete lining placed? Try roof bolting. In the right type ground, this suspension roof support—pinning overhead rock strata together with long steel bolts—can show big savings over the conventional method of supporting the roof with steel ribs and lagging.

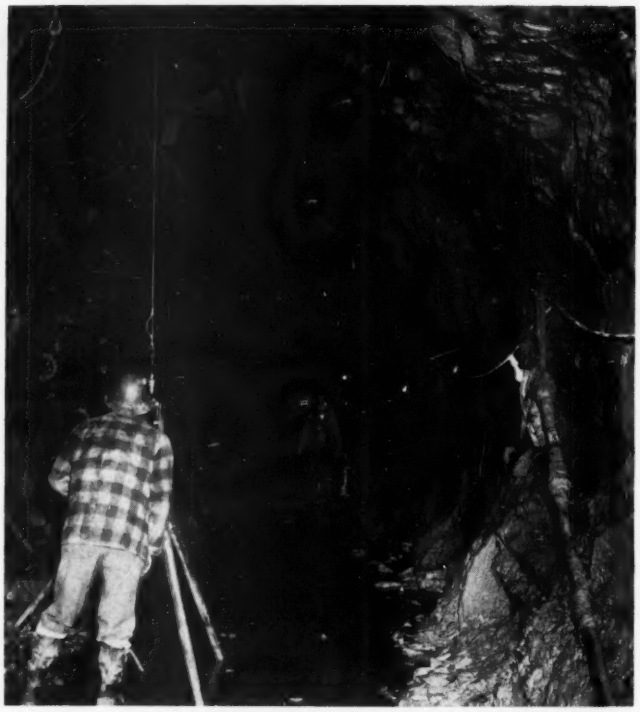
This conclusion is borne out by the experience of the Walsh-Perini combine on its New York City Board of Water Supply contract for the 25-mi East Delaware Tunnel through the Catskill Mountains. There, for each linear foot of tunnel so supported, bolting has saved 300 lb of steel, ½ yd of excavation and ½ yd of concrete lining.

Of course, on a unit price job such as this, where payment is so much per pound of steel and yard of rock or concrete, the primary savings revert to the owner rather than the contractor. But roof bolting helps the latter, too, by reducing the material supply and disposal problem, by saving time, and by increasing job safety. On the other side of the picture, the bolted roof must be gunited to prevent slacking of the exposed rock surface, and powder consumption per cu yd seems to rise slightly.

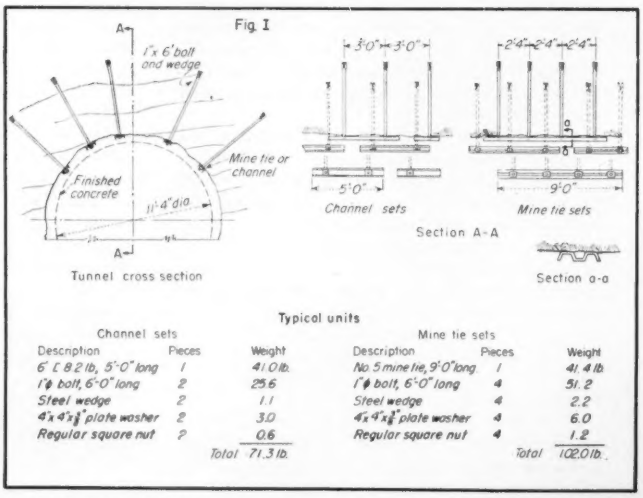
Develops Arch Action

In simplest terms, roof bolting is much like fastening several timber planks together to make a strong laminated beam. Long wedge bolts are placed in predrilled holes in the tunnel roof to fasten rock layers together and thus develop an arch action that prevents ravelling of the crown and haunches. The bolt is anchored by driving it against the end of the drilled hole to expand a wedge in its slotted tip.

In recent years, bolt-supported roofs have gained wide acceptance in coal mines, and the method is being used increasingly in metal mining. However, roof bolting is comparatively untried in tunnel work. Its first construction use was on the Keyhole Dam diversion tunnel in Wyoming (a 654-ft bore holed through in September 1950) and on one 200-ft section of the



IN THE HEADING—The usual heavy steel rib sets and lagging to support the tunnel roof have been done away with on New York City Board of Water Supply's East Delaware bore. Instead, contractors Walsh and Perini are holding the roof with long steel bolts.



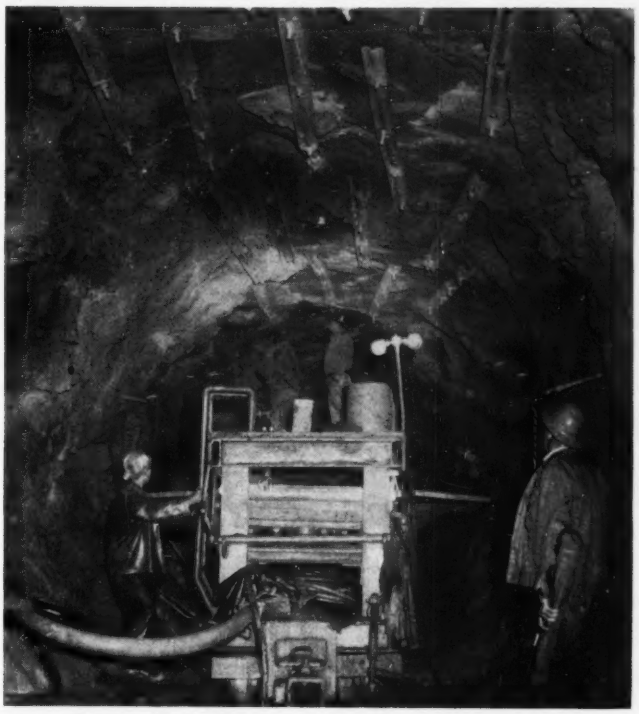
Typical units

Channel sets			Mine tie sets		
Description	Pieces	Weight	Description	Pieces	Weight
6" [8.2 lb, 5'-0" long	1	41.0 lb.	No. 5 mine tie, 9'-0" long	1	41.4 lb
1"ϕ bolt, 6'-0" long	2	25.6	1"ϕ bolt, 6'-0" long	4	51.2
Steel wedge	2	1.1	Steel wedge	4	2.2
4"x4"x¼" plate washer	2	3.0	4"x4"x¼" plate washer	4	6.0
Regular square nut	2	0.6	Regular square nut	4	1.2
	Total	71.3 lb.		Total	102.0 lb.

ROOF-BOLTING SCHEME, shown here in typical sections, is modified in practice to include more or fewer sets as ground requires. Actual supporting steel use has averaged 50 lb per lin ft of tunnel with this bolt system, whereas it averaged 350 lb with ribs.

When Bolts Hold Up Tunnel Roof

By HENRY T. PEREZ, Senior Associate Editor



AT THE FACE—Inspectors check suspension roof support, which was installed from the top deck of this jumbo at the same time it drilled the face for the next round. Note how semi-flexible longitudinal steel ties have been bent to support rock between bolts.



ROOF-BOLTING MATERIAL is stacked on mine car for delivery to the heading, and this one load is enough to support 100 ft of tunnel. Contrast this with former, cumbersome supports: double I-beam wall plates, H-beam ribs on 4-ft centers, and channel lagging.

6-mi Duchesne Tunnel in Utah (CM&E, December 1951), both U. S. Bureau of Reclamation projects. But in this type of work the 25-mi Board of Water Supply tunnel job of Walsh Construction Co. and B. Perini & Sons Inc. is by far the largest installation of roof bolts to date. And, unlike the USBR tunnels, where bolts were fitted only with plate washers, the bolts on the BWS tunnel hold longitudinal steel channels or ties to give additional roof support for preventing rock falls.

The East Delaware Tunnel is part of New York's Delaware Aqueduct, and runs from Pepacton to Grahamsville to connect Pepacton and Rondout Reservoirs. Driven 13 ft 2 in., finished diameter will be 11 ft 4 in. inside an 11-in. concrete lining. The bore is being attacked on six headings: two from portals, two turned both ways from one 605-ft and one 965-ft shaft.

Ideal Conditions

Ground is generally flat-bedded red shale and gray sandstone in thin laminations that make it ideal for roof bolting. Walsh-Perini began suspension roof support in October 1950, and used it to hold more than 30,000 ft of tunnel during the next year. Results were so good that present operations incorporate that method 100%.

Fig. 1 shows the contractor-devised scheme for suspending the tunnel roof, and lists the supporting units needed. Naturally, this pictures an idealized set-up. In practice, the rock does not always break as smoothly as shown, and various sections can require more or less support. The exact number, location and spacing of bolts and longitudinal steel is dependent upon field conditions. Actual steel use, on a per-lin-ft-of-tunnel basis, has averaged only 50 lb.

With one exception, the suspension roof units are standard Bethlehem Steel Co. items as manufactured for mine use. Bolts are a 1-in. steel rod 6 ft long, with 5 in. of 1-in. rolled thread at one end and a 1/16x6-in. slot in the other. The slot takes a flat-headed forged steel wedge. It is 5½ in. long under its round head, ¾ in. wide, ¾ in. thick, and tapers to 1/16 in.

The roof ties are actually Bethlehem's pressed steel double-chan-





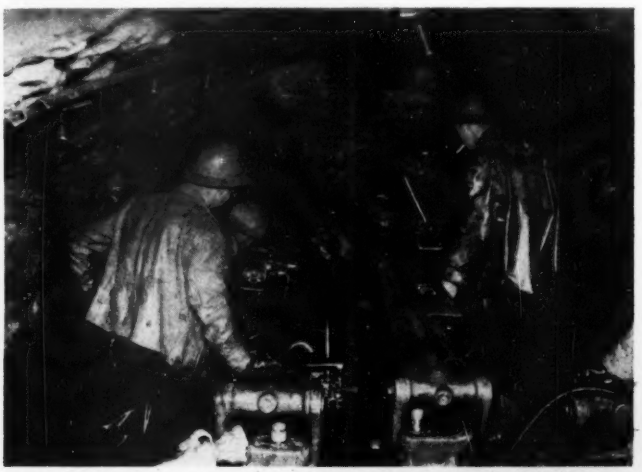
BOLT HOLES ARE DRILLED by stopers from Jumbo's deck and wings. At left, first holes for each of two sets are being started. After longitudinal steel ties are bolted into these, the rest of the holes in the ties act as templets to spot remaining drill holes as shown in right photo. Holes for the 1-in. bolts 6 ft long are drilled 5 ft 8 in. deep with a minimum gage of 1¼ in.

nel section (a modified W shape) commonly used for narrow-gage railroad ties. They weigh some 5 lb per ft, and are furnished in 9-ft lengths with four holes punched to accommodate 4x4x⅜-in. plate washers and roof bolts. Where roof break is extremely uneven, these ties are often cut in half for installation in two 4½-ft lengths.

The exception to the standard mine units are the 6-in., 8.2-lb channels that are sometimes used in place of the pressed steel ties. They were originally ordered from Commercial Shearing & Stamping Co. for use as lagging when the tunnel was being supported by ribs, and have been punched to take two roof bolts. (While the channels are heavier than necessary for roof suspension, upping poundage per foot, you take steel where you can find it these days.)

In addition to this channel lagging, the rib-supported tunnel called for double 8-in. I-beam wall plates at the springline on timber posts; 6-in., 20-lb H-beam ribs on 4-ft centers; and 4-in., 13-lb H-beam spacers between ribs. The roof was blocked to the ribs with timbers. Total steel per foot of





NUT IS TIGHTENED with air impact wrench to insure a uniform 7-ton loading on each bolt. Note that this tie is cut to 4½ ft.

FACE IS DRILLED by six drifters, three to each deck of jumbo, that are mounted on mechanical booms raised or lowered hydraulically. Drill steel is all 1¼-in. hollow round with 3-ft changes, bits are carbide-insert type, holes are drilled 9 ft deep.





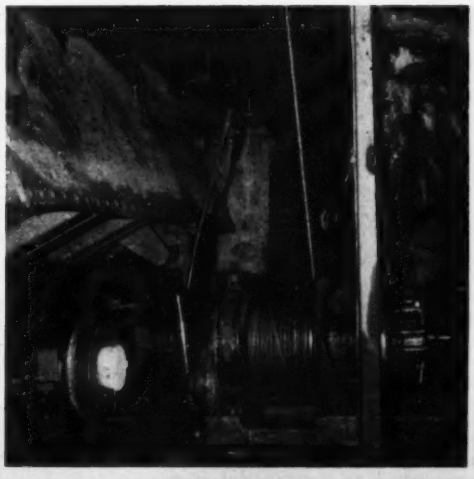
ROOF BOLTS ARE DRIVEN into hole by stoper fitted with a cupped head. When wedge in slotted tip of bolt strikes end of hole, it expands bolt to anchor it firmly in the rock. Washer and nut at other end, which were run up to correct position on bolt before it was inserted through longitudinal tie, hold latter member tightly against tunnel roof when driving of bolt is completed.

ribbed tunnel averaged 350 lb as against the present 50 lb with roof bolts—a net saving of 85%, or 300 lb of precious metal for each foot of the bore. Pound for pound, the cost of furnishing and installing steel is about the same under the two methods.

The suspension roof support is installed from the top deck of the regular jumbo at the same time the face is drilled. While the total heading crew has had to be increased to handle this combined operation, the over-all time cycle for each advance has been reduced because of the simultaneous setting of roof steel and drilling of blast holes.

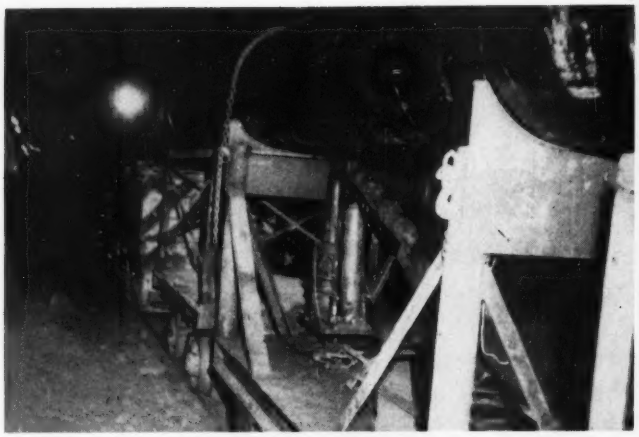
Roof bolting also makes for savings other than in steel and time. No timber is required for wall posts or roof blocking. And, because rib sets no longer have to be accommodated, driven diameter of the tunnel can be reduced. This saves ½ yd of rock excavation per foot on the East Delaware job and eliminates the necessity of later replacing this over-excavation with extra concrete. Then, too, there is no danger of fly rock from a blast dislodging the supports, and the





CARS ARE SWITCHED on simple passer kept close to the face. To receive empty car, frame riding transverse rails is moved to main line, then both are pushed aside to let loaded car pass by.

MUCK IS DUMPED by air ram into bin that feeds hoist skip in enlargement of tunnel at base of shaft. Air-operated tugger spots muck train for dumping, freeing locomotive for other use.





VENT-PIPE JUMBO handles 30-ft lengths of 26-in. pipe with ease. After jumbo carrying two parallel pipes is positioned by locomotive (left photo), hydraulic device is readied to swing section up and over into place to extend main ventilation line to face (right photo). All it takes is a few strokes on built-in jack to lift unwieldy pipe length, which weighs almost 785 lb.

smoother tunnel interior gives a better flow of ventilating air.

All these factors are helping Walsh-Perini advance each heading an average of more than 40 ft per three-shift day. *Fig. II* shows a somewhat typical 49-hole drill pattern for the full-face attack. Holes are drilled to a depth of 9 ft (to pull 8) from a rail-mounted jumbo carrying six Gardner-Denver drifters in 48-in. shells. The drills, three on each of two decks, are fitted to Gardner-Denver mechanical booms. Vertical positioning of the booms is hydraulic, but horizontal swing is a manual operation. An air-driven pump on the jumbo supplies 750-psi oil to the boom cylinders.

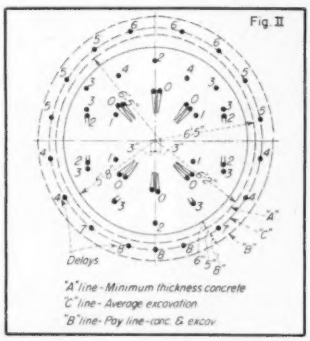
The drifters handle Crucible hollow round 1¼-in. drill steel fitted with Timken or Rockbit carbide-insert four-point bits. Starter gage is 2 in., on a 3-ft steel, and gage decreases ⅛ in. with each 3-ft change.

Also carried on the jumbo are two G-D stopers for drilling roof-bolt holes. For the 1-in. by 6-ft bolts, holes are drilled exactly 5 ft 8 in. deep. They are started with a 1⅝-in. bit on a 2-ft steel and are bottomed out at 1¼ in. after four changes.

(Earlier in the job, before the contractors could get delivery on commercial units, the job shop manufactured its own roof bolts from 1¼- and 1½-in. stock. The 1½- and 1¾-in. holes for these were drilled by a drifter mounted on a bar running along each side of the jumbo.)

When its first hole has been drilled, the mine tie is bolted up in place. Thus the tie's other three punched holes serve as spacers for drilling the remaining holes in the rock for the set. Each bolt is inserted through the tie into its drilled hole after the washer has been slipped on and the wedge started in the slot. Also, nuts are pre-positioned at the correct place on the thread end so that the washer holds the tie tight against the roof when the bolt is driven home to the end of the hole by stoper fitted with a cupped head. The stoper is powerful enough to bend the tie to conform to longitudinal roof contour as it drives the bolts.

Later, all nuts are taken up by Chicago Pneumatic air impact wrench calibrated to give a 200-ft-lb torque. This stresses the bolts to 23,300 psi and loads each one to a uniform 7 tons. After tightening, various nuts are spot checked with a hand torque wrench as an additional precaution.



TYPICAL DRILL PATTERN for 49-hole round includes double-barrelled pyramid cut. Loading totals approximately 300 lb of powder.

When the complete suspension roof support has been installed and the round drilled, blast holes are loaded with 1¼x8-in. sticks of Hercules Gelamite 2X and fired with as many as eight delays. (*Fig. II*) Total loading per round is some 300 lb of powder.

After a minimum wait of 20 min for the heading to clear, a 100-hp Conway mucker is run in to clean up spoil. It loads into 6-yd Magor side-dump cars that are switched on a Canton car passer kept not more than 100 ft from the face.

Muck trains are handled by Goodman locomotives in portal headings and by General Electric units in shaft headings. The GE locomotives are combination jobs that operate either from batteries or trolley, with batteries automatically trickle-charging when the latter is in use.

Current at 2,300 v ac is carried into the heading where it is stepped down by transformer to operate mucker, lighting and blasting circuits. For tunnel haulage, the 2,300-v primary is converted to dc and reduced to 440 by compact GE Ignition rectifier rather than by motor-generator set. And, to minimize voltage drop in the trolley line as the tunnel lengthened, the rectifier was brought from outside and installed in a room off the heading to feed both ways. In-

stalled in 1,000-ft lengths, trolley wire is never brought up closer to the face than 1,500 ft for safety.

To handle 26-in. vent pipe in the tunnel, Walsh-Perini has rigged up a hydraulic jumbo. The rig makes it possible for three men to extend the line 60 ft in minimum time, including removal and replacement of a 5- or 6-ft head-end length that prevents blast damage to the main line.

The jumbo is a flat car that carries two 30-ft lengths of 26-in. Naylor vent pipe (14 ga, 26.14 lb per ft) on fixed elevated cradles side by side.

At one end of the jumbo, on longitudinal centerline, a vertical steel post is fitted to the car deck so that it is free to pivot. A bracket on the post holds a Blackhawk hydraulic jack whose ram operates an arm pinned to the top of the post. The other end of this movable arm carries a cradle located so that it can pick up either of the pipe lengths at midpoint and balance it. It is a simple matter to pump up the jack to raise arm and pipe length, swing the section sideways into place at the end of the vent line, and support it by wires from the roof steel.

No Air-Slaking

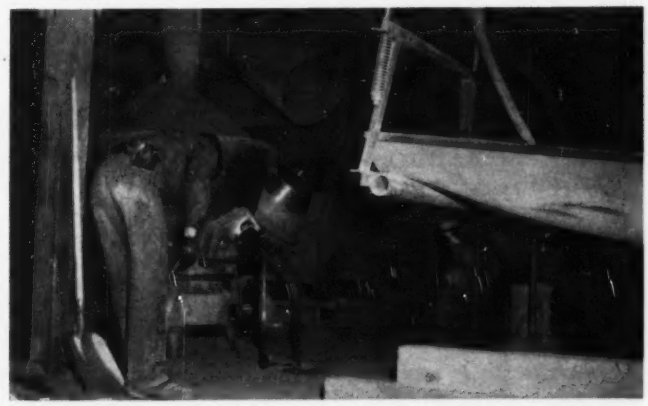
Once a day, on the third shift, the roof newly suspended during the previous three shifts, is gunited to prevent air-slaking. The entire arch is given two coats, with mortar applied from a train of three flat cars: one is fitted with a scaffold platform for the nozzleman, one carries the Gunite machine, and one is loaded with bags of the 3:1 sand-cement gunite mixture.

This mixture is prepared in a shanty outside the tunnel. Sand is heated in a Sutton 1-ton-per-hr oil-fired drier before it is put through a suspended screen that is shaken simply by letting a G-D concrete vibrator rest in it. Screened sand and cement are measured accurately and dry-batched into a Muller 3½S mixer, and then the material is bagged to send into the tunnel.

Other plant outside the tunnel includes, of course, such major equipment as hoisting machinery, generators, compressors and blowers. For example, at 605-ft Shaft 1 a Lambert hoist with 500-hp GE motor handles the cage and 6½-yd muck skip. (At 965-ft Shaft 2, it's a 600-hp Lidgerwood working a 13-yd skip.) While regular power comes to the shaft by high-line, a GE 250-kva, 440-v ac generator driven by GM twin diesel is kept on stand-by for emergency power.



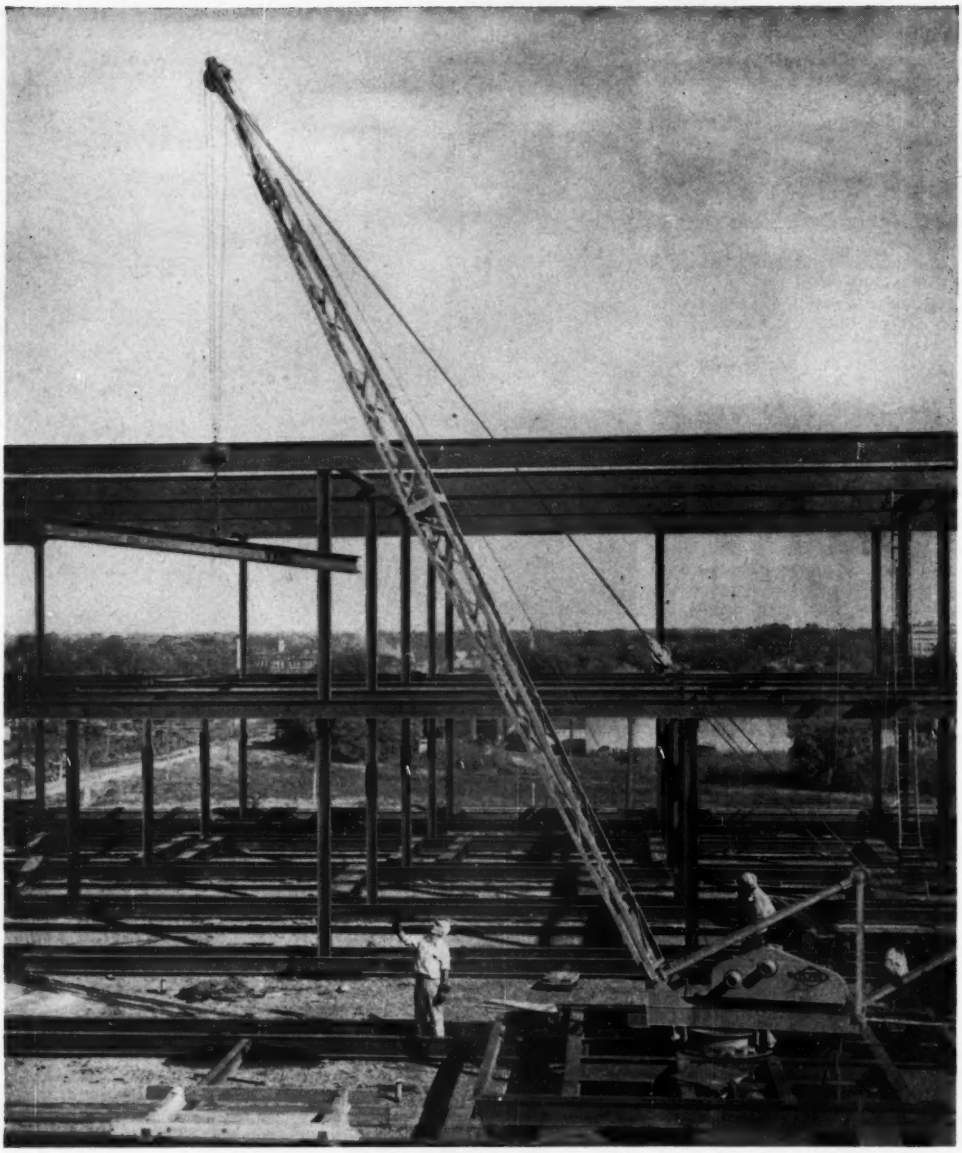
GUNITE EQUIPMENT for coating tunnel arch is carried on three-car train and used once a day to give newly uncovered roof two coats of mortar to prevent rock from slaking. Nozzleman's platform is at left of machine, material car is out of picture to right.



GUNITE MATERIALS are dry-batched and sacked for delivery to tunnel heading. Man at left is moving sand from drier into suspended vibrating screen at right; man in rear measures sand from 1-cu-ft hopper before proportioning it and cement (3:1) into mixer.

Compressors are a 2,000-cfm Chicago Pneumatic and a 2,700-ft Sullivan. They are driven by 350- and 500-hp GE motors and deliver 110-lb air at the faces of the two headings through 6-in. pipes. Each heading is ventilated by a 10,000-cfm Roots-Connersville blower run by 200-hp GE motor. Because of the long distances to the faces, blowers are not reversed after a shot, but operate at "Exhaust" at all times. They are fitted with Burgess-Manning Snubbers to reduce noise in the headings.

All in all, the East Delaware Tunnel job is an excellent example of heads-up contracting — intelligent application of proved methods and equipment coupled with innovations in both that speed progress and cut costs. The contractors responsible for this are Walsh Construction Co., Davenport, Iowa, and B. Perini & Sons Inc., Framingham, Mass. Jack Macdonald, Walsh's vice-president, is in charge of the combine. Charles F. Kelley is project manager, A. J. Allio is project engineer, and Clyde Turner is general superintendent. For the New York City Board of Water Supply, J. M. Fitzgerald is chief engineer, N. LeRoy Hammond is department engineer and W. Courtland Thomas is division engineer.



WITH UNDERCARRIAGE REPLACED by traveling platform, Clyde Whirlette crane sets steel for two additional floors above light roof for Lincoln, Neb., watch plant. Platform rides runner beams blocked up on asphalt fills over existing column heads. Bar joists (in background) will span beams to support new floor above roof. Note wheels at top of platform for transverse transfer from bay to bay over temporary beams. Crane assembly is moved by wrapping taglines around hoist-drum niggerhead.

Small Crane Sets New Steel Over Light Roof Framing

HOW TO ERECT steel for two additional floors on top of the existing 4-story Elgin Watch Co. plant at Lincoln, Neb., stumped Olson Construction Co., of Lincoln for a while, but not for long. A Clyde Model W-3 Whirlette crane, mounted on a clever traveling platform ar-

rangement, proved to be the answer to their prayers.

The size of the building, 130x440 ft, precluded steel erection from the ground by crane for the interior sections could not be reached, no matter how long the boom. The old roof slab was good for only 40 lb per sq ft, and not more than 50,000 lb could be loaded on the head of any interior column.

Column spacing in the original building is 20x20 ft. New H-beam columns for the two additional stories were to be set over the center of existing columns. Then, to carry the new fifth floor independent of the old roof, pairs of I-beam runners were set 3 ft apart transversely across the roof, straddling the new column locations. These beams were blocked up on the old column heads by a cold asphalt mix fill. The new fifth floor was to be carried on bar joists spanning between the rows of beams.

Traveler Replaces Undercarriage

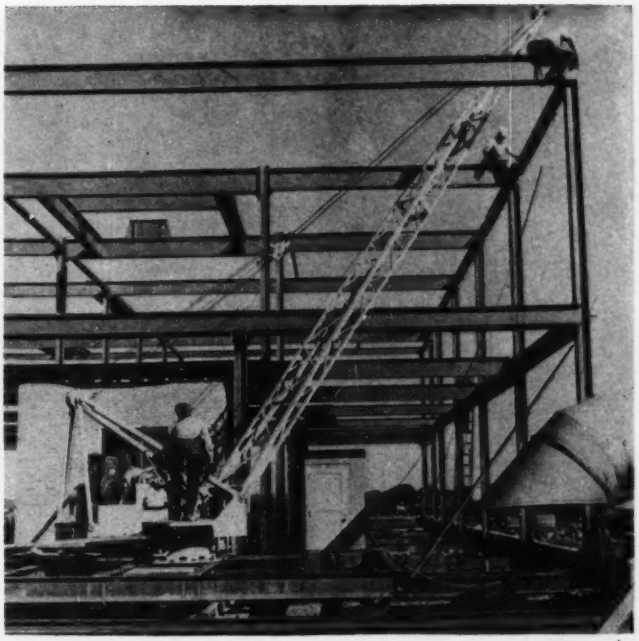
Clyde Iron Works, Inc., makers of the Whirlette crane, in discussing the problems of steel erection with the contractor, suggested putting the small crane on a platform to distribute the load. The Olson Company capitalized on the suggestion by working out a traveling platform arrangement, with the crane mounted on a framework riding the floor beams as a 17-ft gage track.

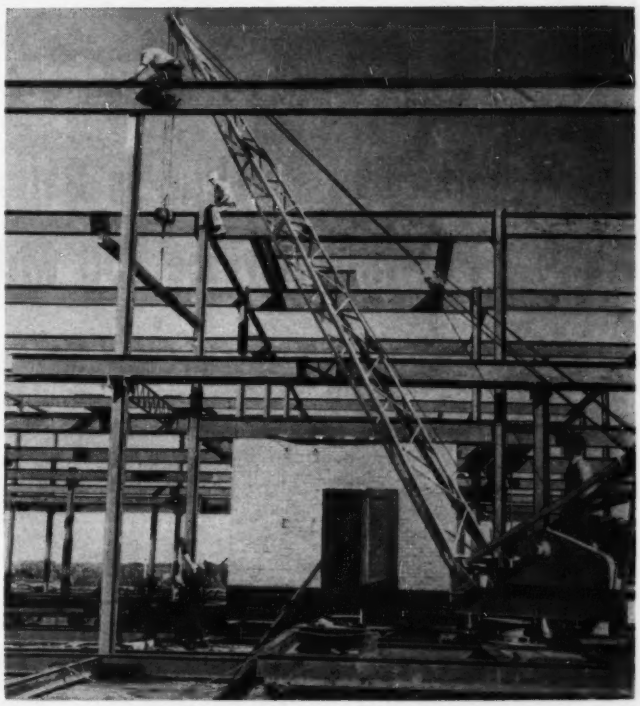
The accompanying pictures show how the job was set up and handled. A welded steel platform was designed and built by Lincoln Steel Works for carrying the gas-powered crane equipped with a 30-ft boom. The platform, riding on four track wheels, was pulled along by a rope hitched around the crane-driven niggerhead. Transverse wheels permitted moving the platform crosswise from bay to bay over temporary beams set on top of the runner beams.

The crane rig proved to be extremely maneuverable. It's 30-ft boom easily could be threaded around erected steel to set closure members.

To save time new steel was hoisted to roof level by a crane on the ground, though the Whirlette could drop its hoist line down the side of the building for picking up steel, when necessary. A dolly riding the pair of runner beams helped distribute the new steel.

For Olson Construction Co., James Greer was superintendent and Kenneth Dodge was engineer on the job.





DEXTERITY OF SMALL CRANE in setting steel is shown by these two views. The 30-ft boom is threaded through framework openings to place closure members. One jarring note in this scene: ironworkers aren't wearing hard hats.



Motor grader backfills on steep slope of Pacific Coast Range after . . .

Inactive Pipeline Is Salvaged and Put Into Service 150 Miles Away



DITCHER OPENS TRENCH to uncover 38-yr-old 8-in. pipeline that lay unused between Lebec and Mojave, Calif. Uprooting of old line and relaying it was accomplished in fast time by the Bechtel Corp., using large quantities of equipment.

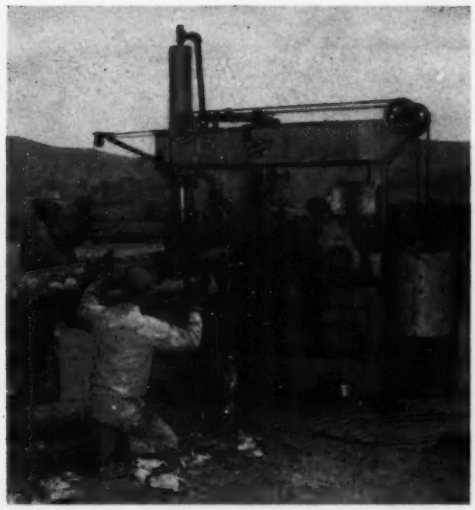
A HALF-FORGOTTEN PIPELINE in Southern California has been taken out of mothballs, moved some 150 mi, and returned to active service, sidestepping the metal shortage to tap a new source of much-needed oil for the Pacific.

In 1913, the General Petroleum Corp. laid down in the Mojave Desert an 8-in. screw-joint line for carrying oil from Lebec to the Santa Fe Railroad at Mojave. But with the changeover of Santa Fe to diesel engines, the Lebec refinery no longer could satisfy demand, and the line fell into disuse.

Last year General Petroleum was studying the possibilities of moving a potential 14,000-18,000 bbl of oil daily from Salinas Valley's San Ardo oil fields (prospected in 1947



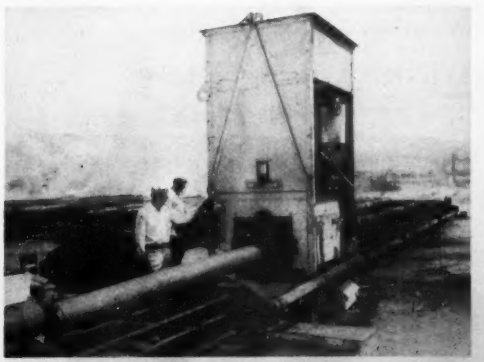
PIPE IS HOISTED by sidebooms on Caterpillar tractors following uncovering. Old line had screw joints; workmen split every other collar joining the 20-ft lengths for easy handling.



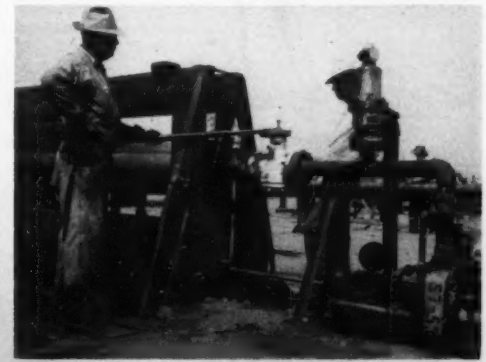
CREW STRAIGHTENS 40-ft lengths of pipe with a hydraulic ram, powered by a small gasoline engine, to begin reclaiming process. All operations were run on a straight-through production basis.



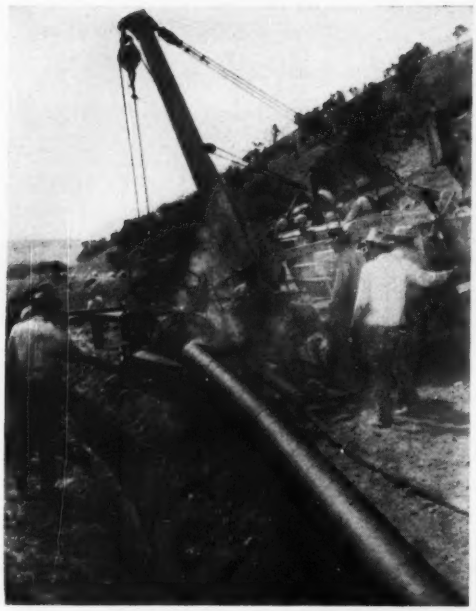
GAS-FIRED TORCHES are inserted and passed through pipe-sections to heat pipe from the inside and burn off old roofing-paper wrappings. Cover still was in good condition, due mainly to dry soil conditions which do not support corrosion.



SHOT-BLASTING PROCESS completes cleaning process on reclaimed pipe. Old line was well preserved, and only about 1% of it had to be rejected. Collars and uneven ends were cut off.



RECLAIMED SECTION undergoes 900-psi hydrostatic test. Special rack with rollers incorporates quick-seal devices for pipe-ends and pressure release returns water via troughs for reuse.



PIPE IS WRAPPED, after sections are joined by welding, prior to laying in new trench 150 mi from original location. A new 4-in. line was laid in same trench with reclaimed 8-in. line.



ACROSS RIVERS and through subterranean waters, too, goes the oil line on its way to the coast. Here both the 8- and 4-in. lines are enclosed in a large pipe treated with a Somastic coating.

but almost unexploited because of the high viscosity of the oil) to tankers in Morro Bay some 40 mi away. The company decided the solution was two pipelines—one of smaller bore to carry cutter stock to the fields to lower viscosity, and one of large bore to carry oil mixed with cutter stock *from* the fields.

The smaller, 4-in. pipe for cutter stock was available, but the larger pipe for oil could not be obtained. So General Petroleum decided to salvage the old Lebec-Mojave line and its pumping stations and move them 150 mi northwest of their original site. Then oil from San Ardo would flow over the foothills of the coast range to the Standard Oil terminus at Estero on Morro Bay.



OIL STORAGE TANKS are delivered in flat sections to new pumping station site. Riveted 50,000-bbl tanks were used with old line. Contractor cut them apart between seams with torches for easy truck transport to reassembly point.



REASSEMBLY OF OLD TANKS is accomplished by welders at new site. Two units are well under way, and the foundation for a third can be seen in the foreground. The old steam-powered pumping stations also were salvaged and put back into service.



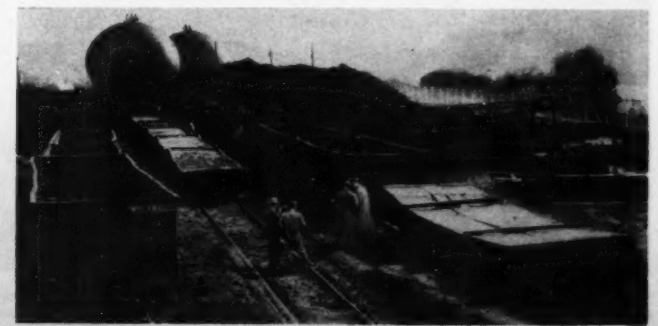
RECONDITIONING YARD for salvaged pipe established by the Bechtel Corp. is run on a steady production basis. Pipe arrives at far left, progressively is straightenend and cleaned, ends are squared, is welded into 40-ft sections and given hydrostatic test.

Pushing the job through to rapid completion, the Bechtel Corp. and its subcontractors had on the job 48 bulldozers, pipelayers and winches. Traveling the roads and along the right-of-way were 41 large and 38 small trucks. Nine cranes did heavy lifting and five ditch-diggers were employed at various points until ditching was completed. Eight air compressors powered many operations; 40 welding machines and 4 cleaning and wrapping machines were used.

Len Beidenstein was project engineer for Bechtel. Al Berland was superintendent of pipelines and Walt Hillman of stations.

Heavy Industrial Scrap Most Useful for Steel

THESE OLD rail cars represent some 350 tons of heavy steel scrap prized highly by the steel makers. They are now on the way to the mills to help reduce the critical scrap shortage. Heavy industrial equipment has a life cycle of about 20 yr. Construction and industrial expansion were at low ebb 20 yr ago (remember the depression?), so now there is a relatively small supply of scrap from this source. And steel mill capacity is being increased each week!





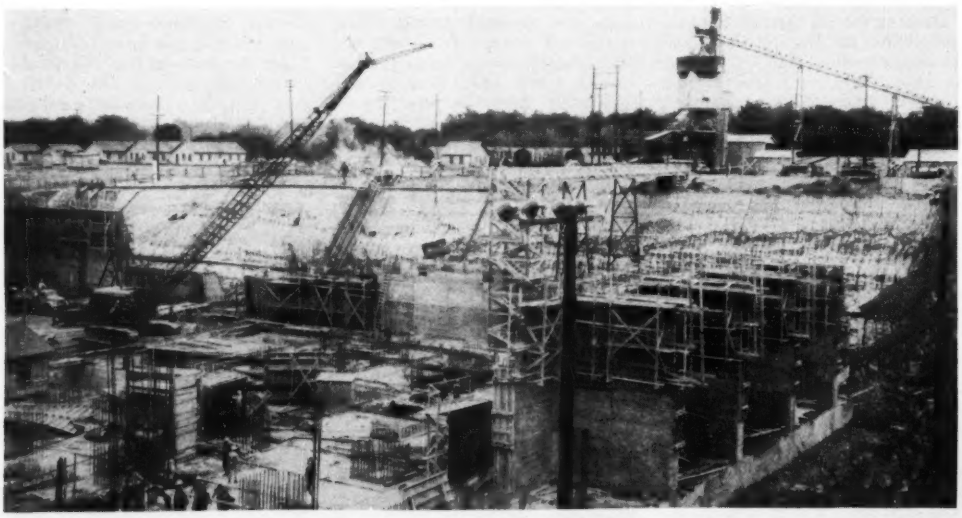
Four stacks grow in a Kentucky soybean field along the Ohio River as . . .

Shawnee Steam Plant Rises Rapidly

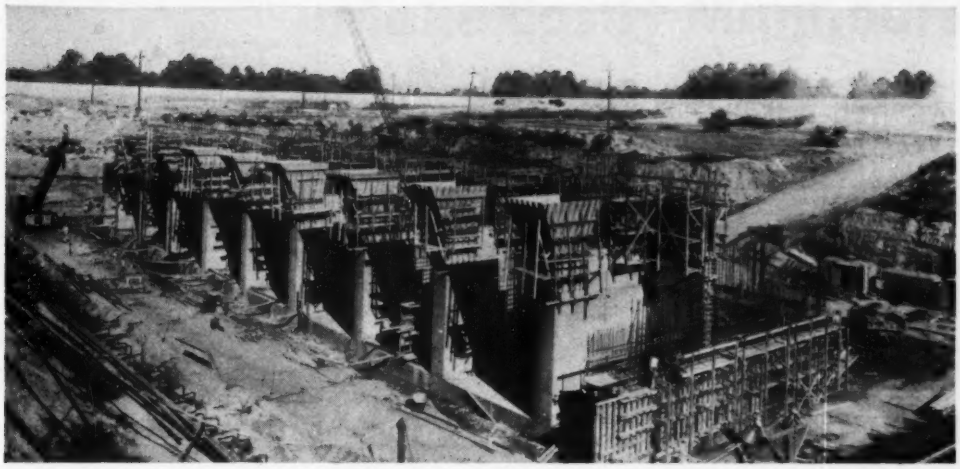
"RAPID PROGRESS" is perhaps the best way to describe construction operations at the Tennessee Valley Authority's $120,000,000 Shawnee Steam Plant on the Ohio River near Paducah, Ky. When completed, this power giant is slated to produce 1,500,000 kw.

Together with the projected ultimate output of 1,200,000 kw by the $73,000,000 Electric Energy, Inc., plant at Joppa, Ill., also along the Ohio, this area will have one of the highest power concentrations in the world. All of it is intended mainly to furnish the tremendous quantity of power required for the new $500,000,000 plant of the Atomic Energy Commission now under construction at Paducah.

TVA is doing most of the work at the Shawnee Steam Plant with its own forces. An abundance of good weather and quantities of big



SUBSTRUCTURE FOR POWERHOUSE rises out of excavated area for large steam-electric plant. Concrete mixing plant in background supplies both trucks and an extensive Pumpcrete system. Manitowoc Speedcrane moves across powerhouse pits on timber bridges.



EXTENSIVE CONCRETE INTAKE STRUCTURE will receive and direct incoming water from the Ohio River several hundred yards beyond the protective dike in the background. This construction was completed last fall; now under construction are coal crusher and hopper buildings near the powerhouse. Coal will be brought in by rail cars and river barges from mines in three states.

earthmoving equipment have combined to transform a former soybean field into a site bristling with new structures—despite flurries of labor walkouts. Some 1,500 persons are employed, working two 10-hr shifts five days a week.

The construction plant area is virtually completed, with administrative and engineering offices, a new equipment maintenance and repair shop and a huge concrete mixing plant now in operation.

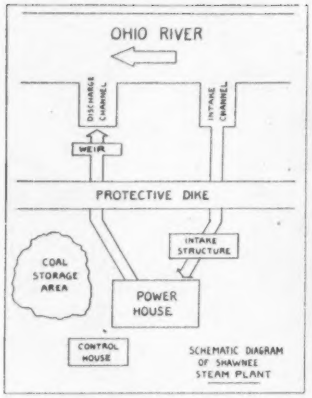
Excavation for the powerhouse, located a few hundred yards from the Ohio River and 16 mi west of Paducah, was completed last fall. Some 469,000 cu yd of earth were removed for the substructure. Caterpillar D8 tractors and scrapers, and Euclid bottom-dump trucks loaded by Koehring shovels and Manitowoc cranes, moved the dirt.

Excavated material was used as fill for a temporary protective dike between the steam plant and the near-by Ohio. A road was constructed on the dike with a Caterpillar No. 12 motor grader spreading gravel. Gravel was brought to the top of the dike by FWD trucks loaded by a Hough Payloader.

Construction now centers around completion of the powerhouse, building the intake structure and



TVA IS DOING MOST OF THE WORK with its own forces, except for some specialized operations which have been subcontracted. First installation of generators will begin here in December—following construction requiring 24,000 cu yd of concrete.



SHAWNEE STEAM PLANT will make use of Ohio for water supply and coal by barge.



PROTECTIVE DIKE was built with material excavated from powerhouse site. Caterpillar No. 12 motor grader spreads gravel on top which now becomes a convenient roadway.

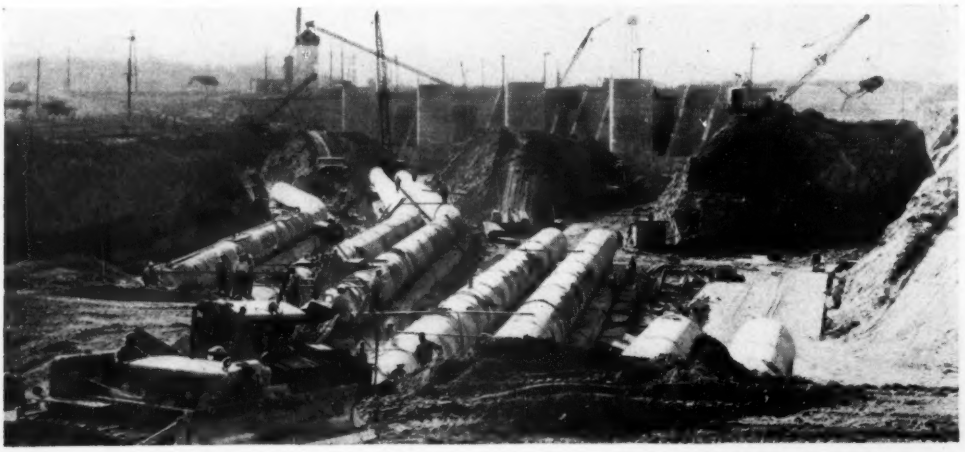
excavation and dredging of intake and discharge channels. Custodis Construction Co., Chicago and New York, has a contract for constructing four stacks, each 250 ft high. Concrete comes by bucket and by an extensive Pumpcrete system from a concrete plant near by. Into the powerhouse substructure went 68,000 yd of concrete.

Backfilling with tractors and bulldozers has begun around the powerhouse substructure. Approximately 150,000 yd of earth and 140,000 tons of washed gravel will be required. A Caterpillar D6 tractor and sheepsfoot roller compact the fill material.

TVA carried out excavation of



MORE FILL-IN of the discharge conduit area. TVA uses plenty of big equipment to make the dirt fly. Powerhouse site yielded 469,000 cu yd of earth.



WATER DISCHARGE CONDUITS curve away from the powerhouse in background. Intake pipes will curve in from the left. Backfilling progresses with Caterpillar D8's in foreground and a P&H dragline on a lofty perch in the background.

the powerhouse area. Excavation and dredging of intake and discharge channels is under contract to Luhr Brothers Construction Co., Columbus, Ill. Some 775,000 yd of earth will be removed from the two channels and used as fill north of the coal storage area. Filling and grading in the storage area is practically completed.

A Caterpillar DW20 tractor and No. 20 scraper, along with D8 tractors and No. 80 scrapers, are working in both channel areas while Euclid bottom-dump trucks, loaded by Lorain and Manitowoc draglines are working in the discharge channel. A Caterpillar No. 12 motor grader maintains haul roads in both areas.

To Handle Coal

Concrete for the intake structure foundation was placed last fall. Now under construction are coal crusher and hopper buildings near the powerhouse. Coal brought in by rail will move on sidings to the hopper building and then by conveyor to the crusher plant. Coal from river barges will move directly to the crusher building on conveyor belts. The plant soon will begin stockpiling coal from mines in southern Illinois, western Kentucky and Indiana.

The construction schedule calls for the first of the 150,000-kw power units to be installed in December, with at least three more to follow at once at 6-week intervals. Top TVA men on the job are F. L. Weiss, project manager, Clyde Caylor, construction superintendent and G. U. Mason, construction engineer.

Equipment in use by TVA:

18 Caterpillar tractors
1 Caterpillar No. 12 motor grader
4 Manitowoc cranes
1 P&H crane
2 Koehring cranes
1 Unit truck crane
5 LaPlant-Choate scrapers
2 FWD trucks
1 Huber roller
1 Bay City truck crane
1 Alabama pole trailer
1 Mack tractor truck
2 Sheepsfoot rollers
3 Adams graders
18 5-yd. trucks
1 Hough Payloader
2 Bucyrus-Erie cranes
1 Lorain truck crane
2 Barber-Greene trenchers
5 Euclid bottom-dump trucks
1 30-ton diesel locomotive

Make Costly Manhours More Productive

with

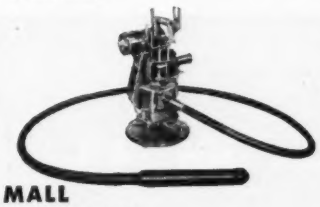
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PORTABLE

POWER TOOLS



Capitalize the manhours you pay for by getting a bigger pay-off in terms of *more productive labor* . . . with the help of smooth-working, time- and labor-saving Mall Power Tools. Less sweat, less muscle, less end-of-the shift fatigue but more work done — all this adds up to keeping the job on schedule and netting a better return on your contract when Mall Power Tools take over the hard work. Men like the "feel" of these husky, dependable tools and the contractor likes the low-cost maintenance and high scoring heavy-duty service — backed by over 30 years' experience in tool design, production and field testing.



MALL VIBRATORS

Mall concrete vibrators produce better finished concrete at minimum cost because less water, less cement and coarser aggregate are needed . . . for concrete free from honeycombing. Pneumatic, electric or gasoline engine models, equipped with heavy-duty Mall Flexible Shafts.

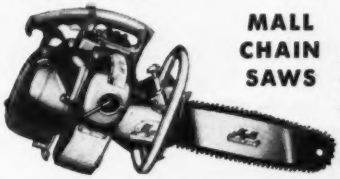
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MALL DRILLS

Mall Drills have perfect balance, are built for years of service drilling any material. A model and size for every condition. Pneumatic or electric power. Capacities ¼" to 1¼".

Write for Bulletin 2073.





MALL CHAIN SAWS

Here's dependable cutting power for woods or construction jobs . . . handles hard, soft, wet, dry or frozen wood. Available in pneumatic, electric or gasoline engine types, ranging from 12" up to 144" capacity. One and two-man models.

Write for Bulletin 2066.

Write for bulletins listed above for complete details regarding equipment in which interested.

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How NAYLOR Light-weight Pipe is built to take it

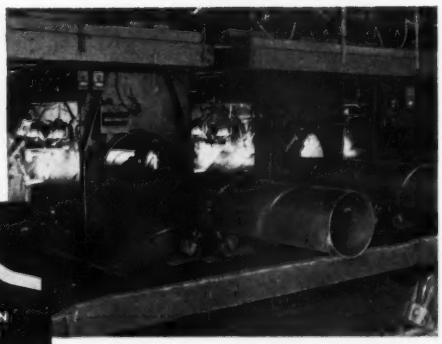
Here is the picture story of how Naylor creates a light-weight pipe for heavy-duty service.



In this operation, the Naylor pipe machine forms sheet into a spiral, lock-seamed pipe. This process creates a structure that is pipe before it is welded. As shown in the sketch of a lateral section before welding, the lockseam carries the structural load.



Illustrated here is the Naylor automatic welding process which welds the lock-seamed spiral to the wall of the pipe. This step provides a positive seal as shown in the lateral-section sketch after welding.





Because the lockseam carries the load and the weld is relieved of any strain, Naylor pipe provides the practical answer for lines that must stand up in rugged service in the construction field.

Write for Bulletin No. 507

NAYLOR PIPE

Naylor Pipe Company
1268 E. 92nd St., Chicago 19, Ill.
New York Office:
350 Madison Ave., New York 17, N.Y.

Sign Magic



THE CONSTANT SHIFTING of work areas on busy downtown streets made it a time-consuming nuisance to post adequate warning signs for traffic by the Pacific Gas & Electric Co. in Oakland, Calif. Signs large enough to assure the safety of maintenance men were clumsy and hard to transport either in a truck or by hand.

A lightweight two-wheel trailer, with a welded pipe frame and small pneumatic tires, to carry the sign, was the answer. The rig can be towed to location and can be spotted easily by one man. Signs are interchangeable, and the frame supports an oblique "ear" on each top corner to hold warning flags.

Upside-Down Radiators Save Money

AFTER 23 YEARS of service, the steam-heat radiators in the New York State Office Building in Albany are beginning to leak around the nipples that seal the sections along the bottom of the radiators. Leakage does not occur in the upper nipples because they are not exposed to water and sediment inside the radiator.

Richard J. Glander, plumber and steamfitter in the building, ends the leaks and keeps the same radiators in service by disconnecting them, turning them upside down and end-for-end, and reconnecting them. This way the unaffected portions of the sections are at the bottom and many extra years of additional service realized—without resorting to the time and expense involved in separating the sections and inserting new nipples. The building has some 3,000 radiators and an annual saving of $14,000 is estimated.

Here's where it pays to use carbide insert bits:

Under drilling conditions like those at the right, it's a safe bet that carbide insert bits can cut your costs, boost your production. Carbide insert bits drill longer without sharpening; bit reconditioning is simplified and drillers spend less time changing bits. Since carbide insert bits hold their gauge longer, you can bottom your hole in the desired size without having to remove excess rock to allow for tapered hole.

1. Extremely deep holes
2. Very hard ground where a steel bit will not drill out a full increment of drill steel.
3. Small blast holes
4. Constant gauge holes
5. Extremely abrasive ground
6. Block hole drilling in hard ground
7. Locations where transportation and reconditioning of bits are problems.

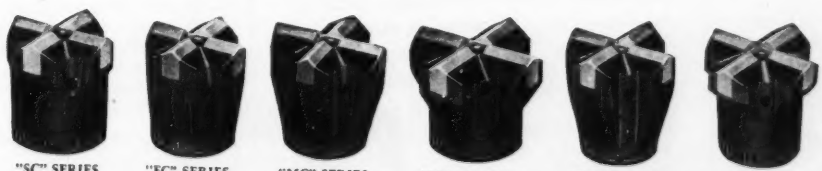
Here's why it pays to use TIMKEN® carbide insert bits

If carbide insert bits are your best bet, your best bit is Timken®!

Timken carbide insert bits are removable—screw on or off the drill steel. As a result, drillers have sharp bits at all times without changing the entire steel.

The bit body of Timken carbide insert bits is made of electric furnace Timken alloy steel. And a special shoulder union developed by the Timken Company protects threads from the drilling impact.

Timken carbide insert bits are available in six series. The Timken Rock Bit Engineering Service will help you select the right one for your job. The Timken Roller Bearing Company, Rock Bit Division, Canton 6, Ohio. Cable address: "TIMROSCO".



"SC" SERIES (¾" thread) "FC" SERIES (⅞" thread) "MC" SERIES (1" thread) "MCA" SERIES (1" thread) "DC" SERIES (1⅜" thread) "DCA" SERIES (1⅜" thread)

TIMKEN REMOVABLE ROCK BITS

TRADE-MARK REG. U. S. PAT. OFF.

Yes, sir! You can get that 8" Suction Hose by noon today!



CONTINENTAL has it in stock Boston to 'Frisco 1½" through 10"

You'll get prompt delivery on suction hose when you call one of Continental's 16 Warehouses. All these warehouses carry large stocks of suction hose. Many of them stock both 8" and 10" hose.

Thus you have no profit-eating delays waiting for long distance shipments. And there's no need to tie up your own working capital in costly suction hose inventories. These conveniently located Continental Warehouses carry the inventory for you. So next time you need suction hose, call the nearest Continental Warehouse. You'll like the service you get.

Immediate delivery from 16 CONTINENTAL WAREHOUSES

BALTIMORE 1, Md. 112 West Pratt St.
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BUFFALO 3, N. Y. 115 Clinton St.
CHICAGO 10, Ill. 10 West Hubbard St.
CINCINNATI 2, Ohio 49 Central Ave.
CLEVELAND 15, Ohio 2731 Prospect Ave.
DETROIT 27, Mich. 13801 Schoolcraft Ave.
INDIANAPOLIS 2, Ind. 309 North Capitol Ave.
LOS ANGELES 21, Calif. 2037 South Santa Fe Ave.
MEMPHIS 3, Tenn. 268 Madison Ave.
NEW YORK 7, N. Y. 147 Chambers St.
PHILADELPHIA 6, Pa. 311 North Randolph St.
PITTSBURGH 21, Pa. 607 Brushton Ave.
SAN FRANCISCO 3, Calif. 450 Potrero Ave.
ST. LOUIS 8, Mo. 4018 Olive St.
SYRACUSE 2, N. Y. 1606 West Genesee St.

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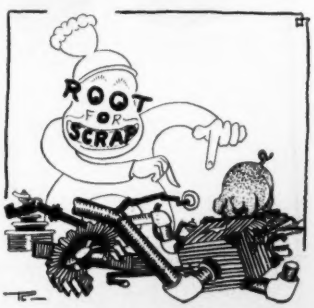
Receive Moles Awards



CHARLES B. SPENCER (left) and Stephen D. Bechtel (right) share a joke with George F. Ferris at the recent 12th Annual Award Dinner of The Moles, a New York association of leaders in tunneling and heavy construction work.

Spencer, president of Spencer, White & Prentis, Inc., New York, received the 1952 Moles' Member Award "in recognition of his pre-eminent pioneering work on new foundation methods and his outstanding accomplishments, notably in the fields of subway, tunnel and dry-dock construction." Bechtel, president of Bechtel Corp., San Francisco, was honored with the Non-Member Award as "citizen, engineer, contractor, in recognition of his illustrious accomplishments during the war and his notable leadership in the fields of oil refining, pipelines, dams and shipbuilding construction."

Ferris is vice-president and general manager of the Raymond Concrete Pile Co. and was chairman of The Moles Award Committee. The society also presented an honorary membership to Gen. Lucius D. Clay, principal speaker at the dinner. Gen. Clay, a former Army engineer and military governor of the American zone in Germany, is chairman of the board of Continental Can Co.



Precision Action

CLEANS DITCH BOTTOM WITHOUT DESTROYING SODDED SLOPES!

HERE'S HOW a major railroad uses one of its several Gradalls to cut costs on a rather routine—but never ending—job.

With extreme accuracy, the Gradall cleans this 7½ foot drainage ditch without harming sodded slopes or disturbing the surrounding area. Completely replacing the hand labor previously required, the Gradall did the job quicker, more accurately, and at less cost.

Many similar excavating jobs—close to curbs, sidewalks, tree lawns, buildings, or around buried pipe or tanks—ordinarily require hand work in addition to machines. But the Gradall's positive down pressure and arm action insures such accuracy and neatness that hand labor is eliminated on nearly all such jobs.

The Gradall's remarkable precision, versatility, and maneuverability return big profits to construction men—cut costs for railroads and municipalities.

Gradall
DIVISION OF WARNER & SWASEY Cleveland

Gradall Distributors in over 60 principal cities in the United States and Canada



The 6 ft. wide, ½ cubic yard bucket starts its precision cut.



The hydraulic boom, working with the skill of a giant arm, takes a skim cut from the bottom of the back slope. The muck is cleaned from the bottom, and a skim cut taken from the lower end of the front slope—lifting it free without disturbing sod.



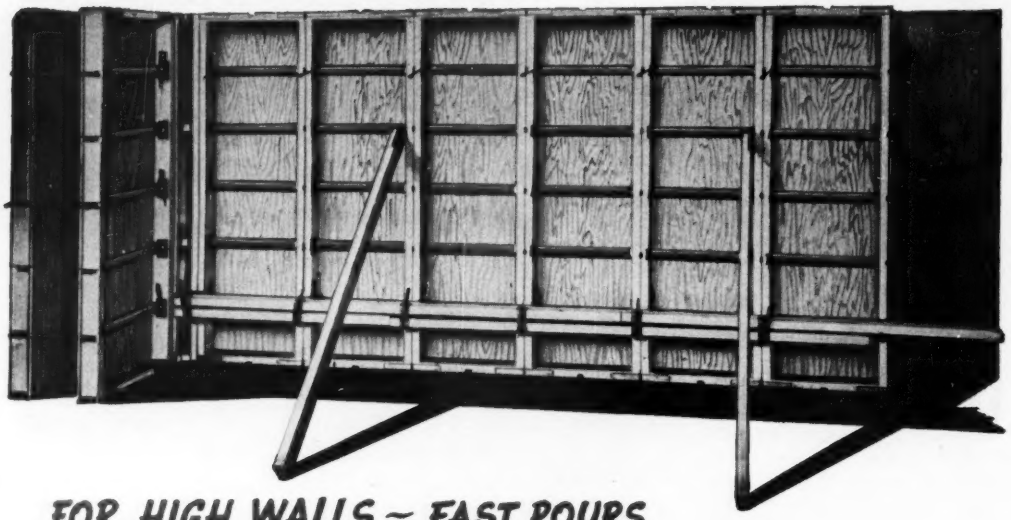
The Gradall swings around and wastes the muck.



The arm-action boom levels the waste evenly over the surface before returning for another cut.

GRADALL—THE MULTI-PURPOSE CONSTRUCTION MACHINE with Controlled Down Pressure

SYMONS FORMS with STEEL RIBS



FOR HIGH WALLS ~ FAST POURS

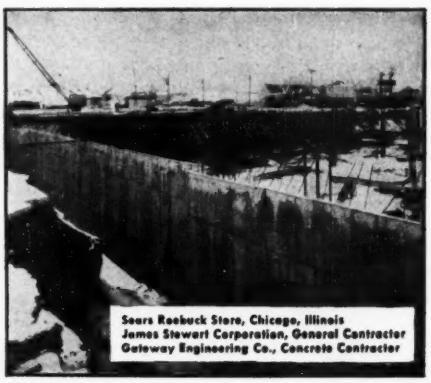
For pouring concrete walls with pressures of 650 to 1500 pounds per square foot, we recommend Symons ¾" Plywood Forms reinforced with steel ribs every 12". These heavy-duty forms allow the use of additional ties where the pressure is greatest.

Strength is combined with speed. Setting-up and stripping are finished in half the time due to the Symons Forming System of securing forms and ties in one operation. The life of the forms is increased many times due to reinforcement of vital parts. The forms are adaptable for all types of jobs. Being modular, the forms may be combined vertically and horizontally for any height.

Weight of forms averages five pounds per square foot allowing one man to easily carry any panel.

The Symons Clamp & Manufacturing Company will prepare a form layout for your next job without charge—Send in your plans.

Forms may be rented with rentals applying on the selling price.



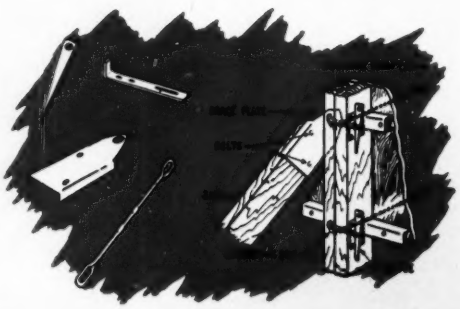
Sears Roebuck Store, Chicago, Illinois
James Stewart Corporation, General Contractor
Gateway Engineering Co., Concrete Contractor

Symons

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☐ Information regarding Symons Panel Forms
☐ Information regarding Column Clamps, Shores, Bar Ties

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Roadside Batch Plant Cuts Equipment Costs



FROM TRUCK TO TRUCK in one simple operation is secret of portable batch plant. Haiss belt loader and under-car unloader with batching bin are the ingredients that fill 4½-yd Blaw-Knox truck-mixer. Note material-saving funnel on loader.

THE BATCH PLANT moves with the job in a western Pennsylvania highway replacement and repair operation.

When the Ray F. Yount Co. of Kittanning was awarded a contract to modernize and widen Route 422 over a 10-mi stretch, the contractor figured that a regular batch plant setup at one location would be too expensive for job requirements, and haul distances were too great for the relatively small amount of materials needed.

A portable batch plant was devised. It consists of a portable Haiss belt loader and a Haiss portable under-car unloader—both powered by Wisconsin engines. These two units are set up along the roadside in tandem, the unloader feeding into the belt loader. A bin was constructed to fit over the under-car unloader.

In use, aggregate and portland cement in bags are trucked to the site. Aggregate is dumped into the bin directly from trucks, and cement bags are opened and emptied into the aggregate to complete the 4½-yd batch. The under-car unloader transfers the batch from the bin to the belt loader which feeds directly into a transit-mixer positioned to receive the batch.

Only two mixer trucks are required, and proper mixing time is fixed to coincide with the short distance from batch plant to pour. On the job, the mixer truck chutes the concrete into the forms and a finishing machine completes placement.

Yount's contract calls for the placing of some 6,000 sq yd of highway at various places over a 10-mi stretch, the finished pavement to be 9 in. of reinforced concrete.



TRANSIT-MIX TRUCK chutes concrete between road forms. Blaw-Knox finisher does the rest, as new lane is laid. Finisher rides form on outside, road surface inside.

"We loaded trucks without booming or moving the crane..."

Yes—now you can do things with clamshells you never did before, and do them right from the cab—with the

"Tag Master"



TOPS IN BUCKET CONTROL

No man needed at the truck to guide the bucket that's TAG MASTER controlled. With this tag line pull (UNIFORM at all levels and adjustable to any job) you can turn, spin, snub or cast your clamshell direct from the cab. You get EXACT spotting, with a light drop that adds years to bucket life. In addition, the TAG MASTER can be used as a dipper trip. Send coupon now for more details of this combination tag line winder and dipper trip—and send it now.

1. Less Booming
2. Less Swinging
3. Less Travel
4. Control of clamshell
5. Can be used as a Dipper Trip
6. Increased performance
7. Low cost operation

MORIN MFG. CO., INC. 946 Elm Street West Springfield, Mass.

Send "TAG-MASTER" details to—

Name .....

Address .....

Make—Size & Model of Machine

5 or 6 INCH AUGERS·· drill up to 80 feet
4¼ INCH AUGERS·· drill to greater depths

Parmanco



MODEL 51V

VERTICAL DRILL

HEAVY DUTY

4 SPEEDS AND REVERSE

Eleven years of development have gone into Parmanco vertical drills. Field tests have been made in every type of prospecting and stripping throughout the world. Here is a mobile drilling tool, built around a 40 h.p. Ford motor and to user's conditions and requirements. In use today in many fields, it is speeding and simplifying jobs.

NOTE: 3 Jacks for leveling machine. This Parmanco feature insures straight holes.

In a recent field test an accurate sample was taken in 30 minutes thru 25 feet of overburden. This was done adjacent to an identical test hole that had taken 8 days to drill and sample by hand.

This Model 51V has four auger rotating speeds and reverse. It has proved its ability to meet the requirements of the general prospecting field where it is not necessary to drill solid limestone.

This machine (Model 51WV) is also built around a Wisconsin 25 h.p. air-cooled motor, 4 speed transmission and self-starter.

PARIS MANUFACTURING CO. PARIS, ILL.

Legal Decisions Concerning Construction

The Rejected Check

A MINNESOTA CONTRACTOR received a check from an owner, drawn on the A Bank, deposited it in a State Bank, the State Bank handed it to a National Bank, and the National Bank sent it to the B Bank, which was located in the same town as the A Bank.

For several months the National Bank had been sending checks to the B Bank for collection, and the B Bank had handled all such checks without objection. When the B Bank received this particular check, however, it suspected that the A Bank might be in financial difficulties, refused to present the check, and mailed it back to the National Bank with a statement that it did not care to handle the check.

The National Bank then returned the check to the State Bank, the State Bank sent it to the X Bank, and the X Bank sent it to the Y Bank in the same town where the A Bank was located, but the A Bank closed its doors the same day that the check arrived, and before the check could be presented.

Then the contractor sued the National Bank and the B Bank for the resulting loss.

"We have a perfect right to refuse to handle any checks that are sent to us for collection," the bank contended.

"Not when there is an established custom under which you do handle them?" the contractor's lawyer maintained, and the Minnesota Supreme Court ruled that the bank was liable in the case of McEnelly *vs* Nat. Bank reported in 214 N. W. 922.

"It is common knowledge that banks hold themselves out to the public as agencies for the collection of drafts, checks and other commercial paper, and that such paper is ordinarily collected through such agencies. In the present case, the B Bank had been acting as the agent and representative of the National Bank in making collections for a considerable time, and had accepted without question all items theretofore sent to it. Of course the B Bank had the right to terminate its relations with

the National Bank or to decline to accept paper against the A Bank on giving proper notice of its intention to do so. But where, as here, the B Bank had engaged in a course of dealing with another bank in which it received and handled all commercial paper sent to it by such bank, it could not arbitrarily and without notice refuse to receive or handle a particular item sent to it in the usual course of business by the other bank, whatever right it may have to reject proffered collections under other circumstances. Under the circumstances here disclosed, it was clearly the duty of the B Bank to present the check for payment, and it is liable for the resulting loss from its failure to do so," said the Court.

The Dishonest Jobber

THE CONTRACTOR had given a generous order for assorted supplies to a new jobber, and in due course the shipment arrived at the contractor's job.

Then, after the contractor paid the jobber's draft in full, a keen looking stranger called at the job, and identified himself as a representative of the manufacturer who had sold the supplies to the jobber.

"Glad to meet you. It's good stuff," the contractor admitted.

"Pleased to hear that, but I'm sorry to tell you that the jobber who sold to you bought from us by fraudulently misrepresenting his financial standing, which compelled us to rescind the sale to him. So, we'll have to retake the stuff from you," the representative explained.

"When did you give notice of rescission," the contractor demanded.

"On the tenth of the present month."

"I bought the supplies in good faith, for value, and paid in full on the fifth. Sorry, but you take no stuff out of this place that you don't pay for," was the contractor's final word.

And the contractor's confidence was quite justified as a standard authority lays down that "when a sale is procured by fraud, the property in the goods is transferred by the contract, subject to the seller's right of rescission and a purchaser in good faith from the fraudulent buyer before the sale is rescinded acquires a good title," as decided in the case of Kingsbury *vs* Smith reported in 13 N. H. 109.

ANOTHER

MAXI-MOUNTED CLAMSHELL*



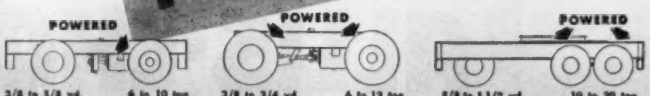
. . FOR THESE MAXIMUM ADVANTAGES:

- one-man control
- operation stability through 360°
- close quarter maneuverability
- fast travel—either direction

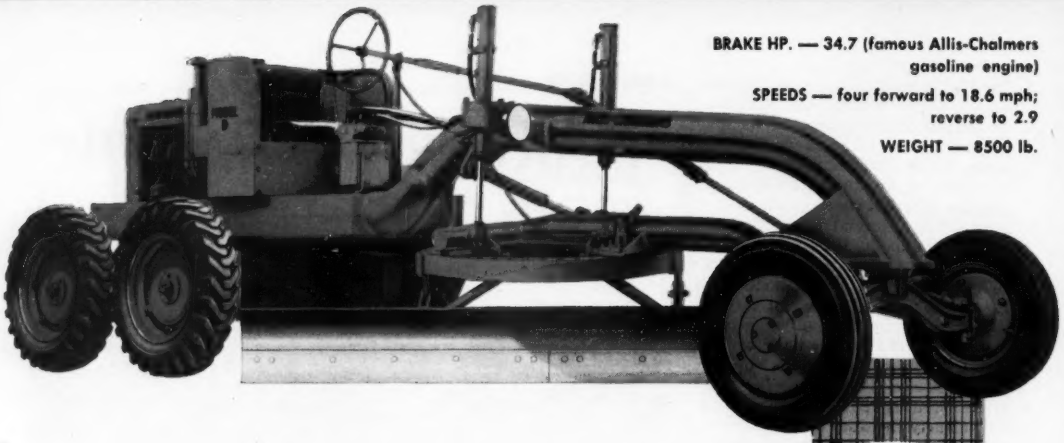
★ Link Belt Speeder MS-70 Zephyr-crane, owned by Chicago Transit Authority, removing old track fill. Low boom operation caused by the low trolley wires calls for maximum crane carrier stability.

Write for additional information.

MAXI® CRANE CARRIERS



ENGINEERED AND MANUFACTURED BY SIX WHEELS, INC. • LOS ANGELES 11, CAL.



BRAKE HP. — 34.7 (famous Allis-Chalmers gasoline engine)
SPEEDS — four forward to 18.6 mph; reverse to 2.9
WEIGHT — 8500 lb.

only the *Allis-Chalmers* **model D**

Does so many jobs at

Low first cost • Tandem drive • plus matched attachments

Here's a grader with power and capacity to do an outstanding job the year 'round on both construction and maintenance . . . yet it costs only one-third as much as large graders. The most important reason for this unequalled performance is sure-footed TANDEM DRIVE. This big grader feature provides better traction, easier riding, smoother blading under *all* conditions . . . and it's *exclusive* with the Model D in this class.

What's more, with easily mounted, hydraulically controlled rear-end loader, scarifier, snowplow and windrow eliminator, there's almost no limit to the jobs it can handle with real savings. See your Allis-Chalmers dealer now and let him give you a working demonstration.

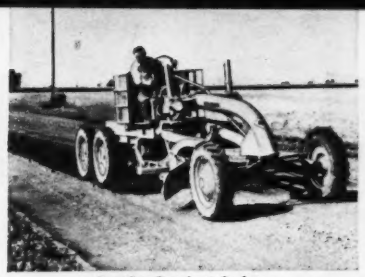
the newest, finest line on Earth!

ALLIS-CHALMERS

TRACTOR DIVISION • MILWAUKEE 1, U. S. A.



Builds Roads and Streets



Scarifies Toughest Surfaces



Slopes Banks



Cuts and Cleans Ditches



Strips Sod, Handles Terracing



Finishes Between Forms, Levels Sub-divisions

so little cost

make it the biggest value of them ALL!



Grades Shoulders



Maintains Without Leaving Windrows



Works and Spreads Oil Mix



Loads Surplus Dirt or From Stockpiles

designed for your jobs!

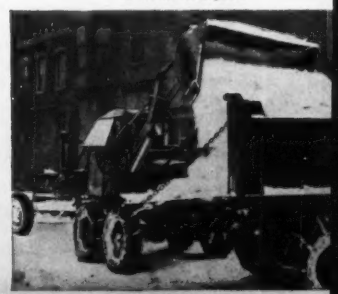
built to take it!

easy to operate!

easy to service!



Plows Snow

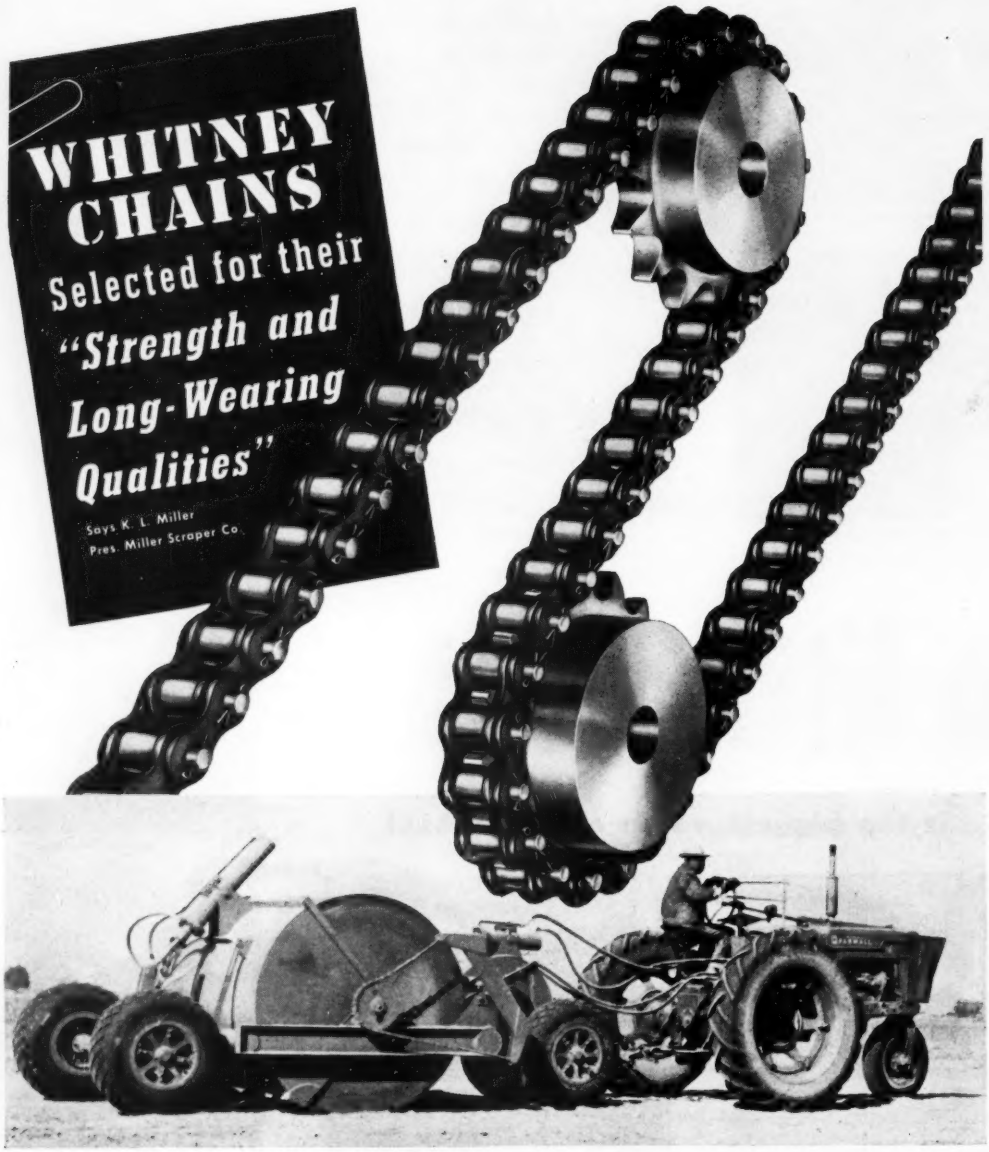


Loads Snow

WHITNEY CHAINS

Selected for their "Strength and Long-Wearing Qualities"

Says K. L. Miller
Pres. Miller Scraper Co.



This Miller Rotary Scraper is exclusively designed to eliminate loading pressure and drag. The ease of loading doubles the capacity over conventional scrapers of the same horsepower and cuts earth moving costs approximately in half.

Positive, dependable transmission of power is essential on this equipment. To achieve this, Whitney Chains were specified by Miller Rotary Scraper.

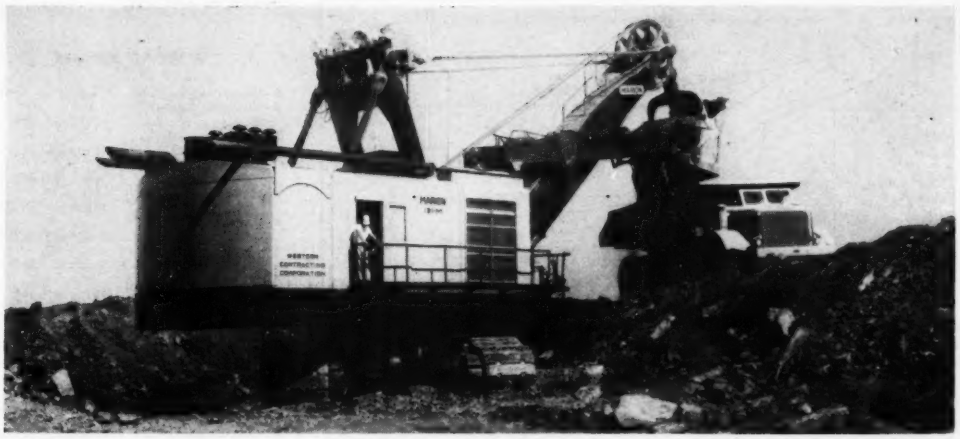
Mr. Miller, President, says:

"We have tried several different types of chain on the dumping arrangement of our scrapers and have found yours to be far superior in strength, smoothness and long wearing qualities."

Mr. Miller's experience is typical of many other companies. Whether your equipment involves scrapers, tractors, earth movers, etc., Whitney Chain Drives will reduce your operating costs, increase production and performance. Their positive, all-steel grip eliminates wasteful slippage and friction loss. Their adaptability to a wide range of drive conditions will simplify your design problems.

Consult your local Whitney Field Office or Distributor, or write direct for complete information and catalog.

WHITNEY CHAIN COMPANY
222 HAMILTON STREET, HARTFORD 2, CONN.

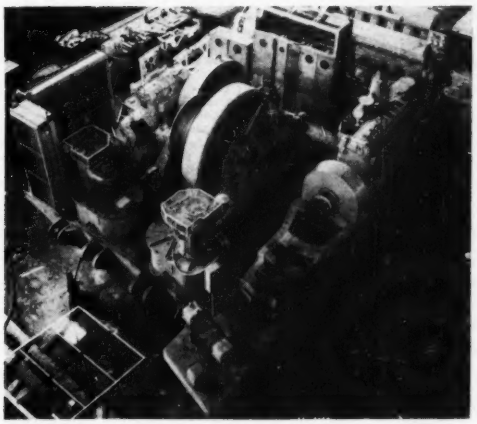


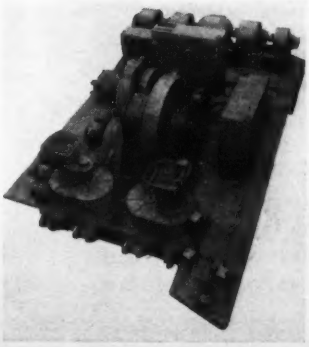
A splendid companion for the 38-yd Euclid end-dump truck is...

The Marion 10-Yd Shovel

...Biggest Rig on Two Tracks

By HAROLD W. RICHARDSON, Editor





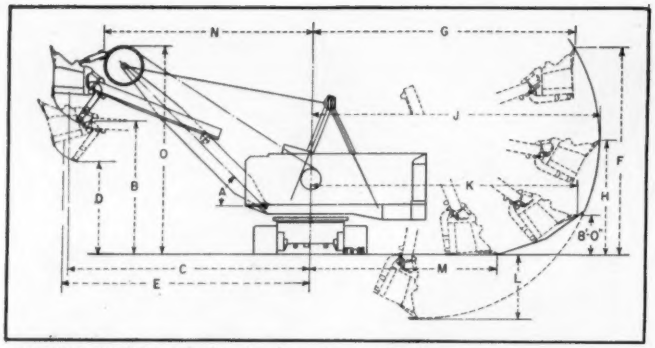
FIRST MARION 191-M SHOVEL was built as diesel-electric unit (above), but basic design is for all-electric machine (right) and second and third machines for Western Contracting Co. were so built. Drives for both models are identical, only difference is in primary power source and generators. In view of diesel-electric rig, main 1,080-hp engine driving hoist motor generator is at rear; 450-hp engine (minus generator here) that powers swing and crowd motors is at right; third diesel, 150 hp, drives alternating current generator for lights and controls. Note clean-cut arrangement of all-electric power plant in right view, main 600-hp motor at rear drives four generators in line to take care of all dc motors. At left of main hoist is exciter motor generator. Light and control current comes from transformers. Two vertical swing motors are in front of both views.

WITH DISCOVERY of large-scale iron ore deposits in Labrador and Venezuela, and start of Taconite developments on the Minnesota iron range, Marion Power Shovel Co., in 1948, sensed the need for a larger contractor's type shovel than was currently available. The shovel visualized must be big in capacity, yet retain the fast operating characteristics and maneuverability of the smaller machines. In 1949 Marion worked out the broad basic design for such a shovel.

Meanwhile, Western Contracting Corp., of Sioux City, Ia., was dreaming up a fleet of earthmoving units bigger than ever, yet fast and efficient. Marion's proposed big shovel fitted right into these plans, so Western ordered one built. Thus was born the new Marion 191-M 10-yd shovel, the biggest machine ever built to travel on two crawlers.

Seeking haulage companions to match the big shovel, Western decided upon a 38- or 40-yd end-dump unit, something that could be loaded by a 10-yd shovel in three or four passes. Out of this desire came the first batch of ten 50-ton 600-hp Euclid Monsters (CM&E, June 1951, page 104).

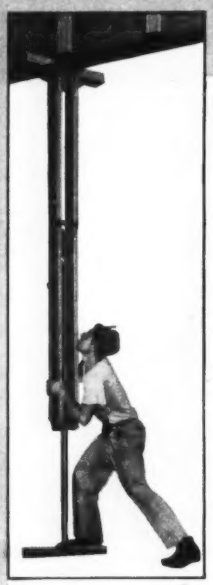
So Marion built the first 191-M for Western to match the Euclid Monsters. Then a second and third rig were added to the schedule as Western stepped out and ordered another ten, and then a third set of ten big Eucs. Now Marion offers



WORKING RANGES of the big shovel are shown in this diagram.

Adjustable . . . to any fraction of an inch! 1/32 1/8 1/16 1/4



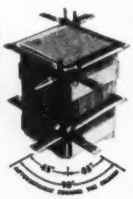


ROOSHORS
THE ONE-MAN SHORE

Rooshors are instantly adjustable to hairline accuracy . . . no fumbling with pins and no time-consuming screw adjustments to delay setting or become clogged with concrete. Wooden upper members allow nailing horizontal and diagonal bracing. Rooshors fit every job and are easily handled by one man. Three sizes: 8 ft. to 14 ft., 7 ft. to 13 ft., and, 5 ft. to 9 ft.—higher stories are shored with the Roos Extension Shores.

ROOS COLUMN CLAMPS
● fast ● foolproof .

Roos Column Clamps eliminate lost time and motion in fitting and adjusting. Hinged units have castings on both legs of each hinged piece so that there is no wrong way to put them on (no rights and lefts). They automatically square the column and have no loose parts—a hammer is the only tool needed with Roos Column Clamps.



Rooshors and Roos Column Clamps are available for rental from warehouse stocks in principal cities from coast to coast.

Write today for Bulletin 152



BAKER-ROOS, INC.
602 WEST McCARTY STREET
INDIANAPOLIS 6, INDIANA

MARION SHOVEL . . . Continued

WORKING RANGES

	45°	50°
A—Boom Angle		
B—Dumping height, max	27 ft 3 in.	31 ft 0 in.
C—Dumping radius at max height	48 ft 3 in.	45 ft 9 in.
D—Dumping height of max radius	19 ft 0 in.	20 ft 3 in.
E—Dumping radius, max	50 ft 0 in.	48 ft 6 in.
F—Cutting height, max	42 ft 0 in.	46 ft 0 in.
G—Cutting radius at max height	51 ft 9 in.	48 ft 3 in.
H—Cutting height at max radius	23 ft 0 in.	24 ft 3 in.
J—Cutting radius, max	57 ft 0 in.	56 ft 0 in.
K—Cutting radius at 8 ft elevation	54 ft 0 in.	52 ft 0 in.
L—Cutting depth below grade	12 ft 9 in.	11 ft 9 in.
M—Radius of clean-up	37 ft 6 in.	36 ft 6 in.
N—Clearance radius —boom point	41 ft 6 in.	38 ft 6 in.
O—Clearance height (boom point)	42 ft 0 in.	44 ft 6 in.

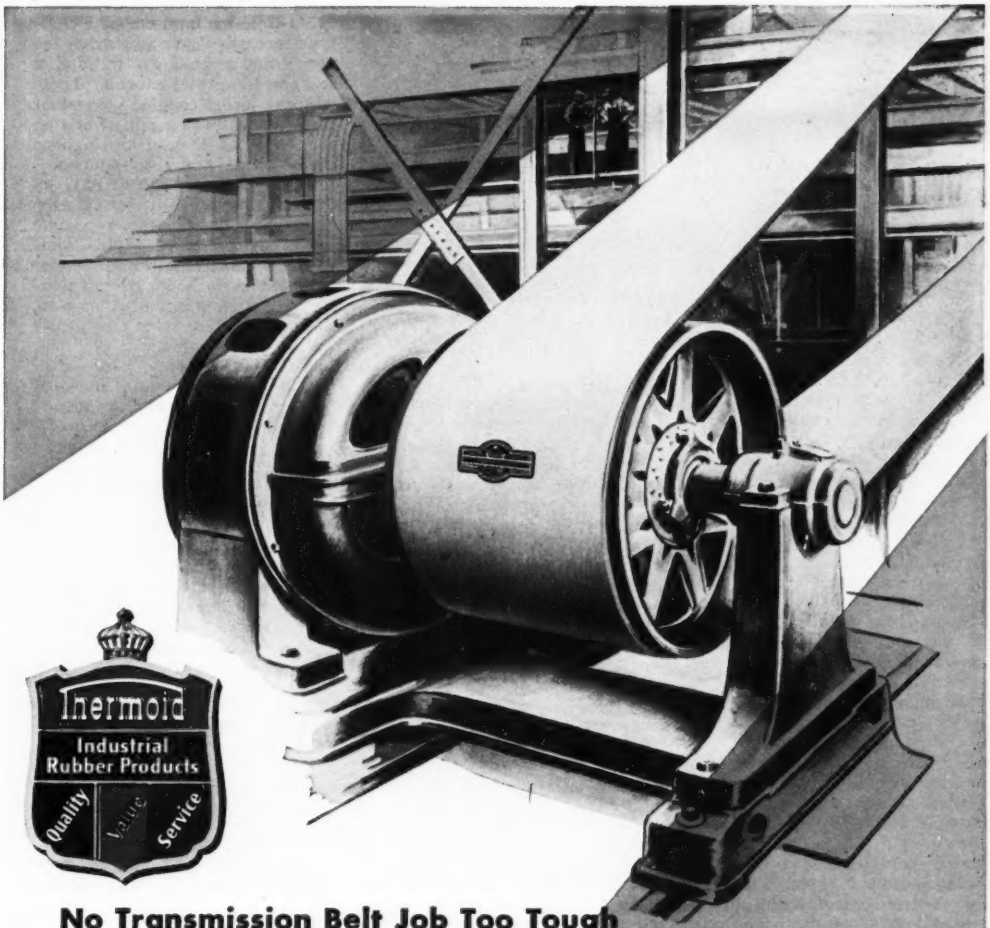
OTHER SPECIFICATIONS

Boom length	43 ft 8 in.
Boom length—foot pin to point sheave shaft	40 ft 0 in.
Point sheave dia	88 in.p.d.
Boom foot pin to shipper shaft	18 ft 0 in.
Dipper handle length—over-all	27 ft 4 in.
Dipper handle length—effective	25 ft 0 in.
Dipper capacity	10 cu yd
Crawler length	26 ft 0 in.
Crawler width—standard	21 ft 6 in.
Crawler belt width—standard	42 in.
Clearance radius—rear end	23 ft 0 in.
Clearance under lower frame	17 in.
Clearance under propel brake	15 in.
Clearance under upper frame	7 ft 0 in.
Clearance height—gantry	32 ft 4 in.
Clearance height—cab	20 ft 5 in.
Clearance width—(cab)	21 ft 7 in.
C to C sprockets	21 ft 2 in.
Bearing area—std 42 in. shoes	160.5 sq ft
Bearing pressure—psi—42 in. shoes	30.7
Hoist drum—pitch diameter	52 in.
Hoist cable dia (double line)	2 in.
Bail pull—max	164,000 lb
Boom support cable dia (quadruple)	2¼ in.
Travel speed	1.5 mph
Swing speed	3.0 rpm

the 10-yd machine as the latest addition to its historic line of excavators.

Out of it all, Western Contracting Corp. will end up with a formidable earthmoving fleet of three big 10-yd shovels and thirty 38-yd end-dump trucks. The first Euclid Monster was delivered to Western's Fort Randall Dam job in South Dakota late last summer for a brief break-in period, then was shipped to Moline, Kan., to haul aggregates for the contractor's huge Wichita air base project. Here it was joined by the first Marion 191-M shovel—an unusual one-shovel one-truck honeymoon, forerunner of a future large and happy family life. That family life will no doubt get under way at Fort Ran-

(Continued on page 78)



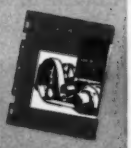
Thermoid
Industrial
Rubber Products
Quality Value Service

No Transmission Belt Job Too Tough ...For Thermoid

Have you some really tough transmission jobs—regular belt killers? They won't be too tough for a Thermoid Transmission Belt. Let your Thermoid Distributor prove that by furnishing exactly the right belt for your job.

For general service he will offer "400", the all-purpose belt that will satisfactorily service all normal operating requirements.

For severe service, or for high speeds with small pulleys, he will recommend Thermoid High Speed "R", made with extra strong, hard 35-oz. duck and top grade rubber. Where there are oil or fumes injurious to rubber, he will recommend Thermoid High Speed "N", with Neoprene friction and skim. Each type is practically custom-built for the service for which it is recommended.



Here's The Book That Will Answer Many of Your Questions

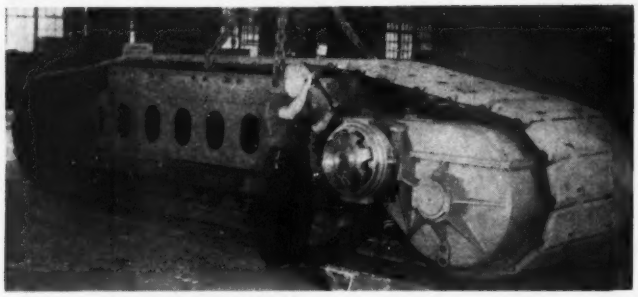
Ask for your free copy of Technical Bulletin No. 3678. It contains practical information, charts, tables and diagrams which will help you select the right transmission belt for your requirements.

Thermoid

Conveyor & Elevator Belting • Transmission Belting
F.H.P. & Multiple V-Belts • Wrapped & Molded Hose

Rubber Sheet Packings • Molded Products
Industrial Brake Linings and Friction Materials

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SIZE OF ONE CRAWLER assembly alone gives a good idea of the magnitude of the whole machine. Treads are 26 ft long and 3½ ft wide.

dall Dam this spring, as Western starts the final river closure stage of earthmoving, and will continue at Oahe Dam, farther up the Missouri above Pierre, as Western starts rolling on its new 6 million-yd contract on that big job.

Marion's 191-M shovel is a big brute, weighing 710,000 lb ready for action, which includes 60,000 lb of counterweight ballast. In some respects it is a stepped-up version of the smaller Marion 151-M, but some improvements have been made and certain features redesigned because of size and to meet manufacturing and shipping requirements.

The machine is designed primarily as a shovel, as conversion to crane or dragline would require a complete rearrangement of hoisting machinery. Working ranges are shown in the accompanying diagram. Travel speed is 1.5 mph; swing speed is 3.0 rpm. Steering is by electric-control hydraulic-operated clutches on the drive shafts. With one track locked the rig can turn in an 18-ft radius circle.

Marion built the first 191-M as a diesel-electric machine around three General Motors diesel engines furnished by Western. Yet, because the shovel company sees all-electric operation as the probable popular demand for an excavator of this size, the rig was designed from the start as an electric machine with Ward-Leonard controls as a main operating feature. The second and third machines are all-electric. Both models are identical except for primary power units. Marion points out that diesel-electric power can be furnished on future shovels, if the customer so desires.

Multiple Motor Power

Power drives on both the all-electric and diesel-electric models are identical; the only difference in power plants is in the original power supply and the generators for the drive motors and auxiliary services. Hoist power is two dc 187½-hp horizontal 600-line mill-type motors, which also drive the propelling mechanism through a shaft in the center journal. These motors are coupled together through flexible couplings, one on each side, to drive a herringbone pinion on the first gear reduction.

Swing power is two dc 62½-hp 600 line vertical mill motors, each driving separate gear reduction units. Crowd power is a single 62½-hp horizontal mill motor mounted on the boom, driving double reduction gears that, in turn, drive the shipper shaft pinions engaging the crowd rack.

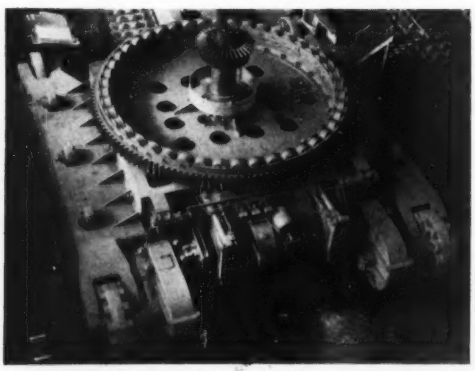
All main dc motors are force-ventilated by individual high-capacity blowers. These motors are the new-type 600 line, normally rated 230 v, and fully reversible. However, they are suitable for more than 600 v at light loads.

Braking of the hoist, swing and crowd mechanisms is by regenerative action of the motors. Electric-control air-actuated brakes are included in each mechanism for holding purposes only, and operate only when the operator wants to shut down the machine.

Why two motors on the hoist and swing? Because the total WR^2 (inertia) of the armatures on two motors is much less than that of the armature on a single motor of equal rating. This is important in shovel operations where the need for quick stopping and sudden reversing is a prime requirement.

On the all-electric machine, power for the motors is supplied by four generators: two 168-kw for the hoist; one 56-kw for the crowd, and a split-circuit 56/56 for

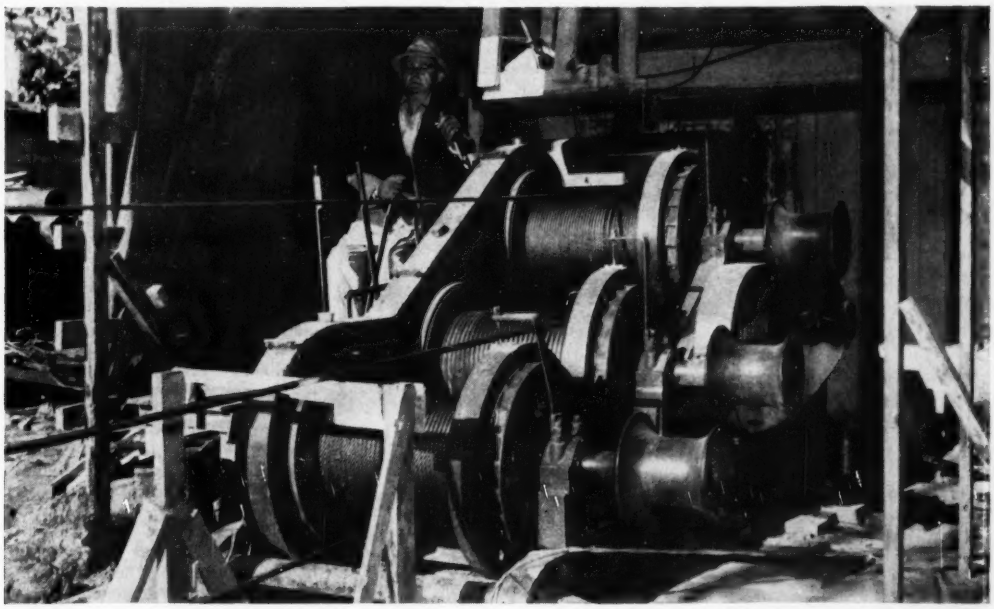
(Continued on page 80)





LOWER FRAME ASSEMBLY is complete here, at left, except for treads, ready to receive the upper frame. The 45 ring rollers are 9 in. dia. Collector rings around center journal are for low-voltage circuit operating electric controls and hydraulic pump motors in lower assembly. At right is the reason for all that power—a 10-yd dipper that dwarfs two men standing alongside.

"Nothing can touch them!"



WHY IS IT that some hoist operators seem more alert than others . . . make fewer mistakes . . . and move more loads, hour after hour? Ask H. A. Pepper. He's one of the best operators in Louisiana—shown above working on the swank New Orleans Mayflower apartments, for general contractor Chris Larsen Co., New Orleans.

This $1,200,000 structure was built in less than a year; and all hoisting was handled by one American Model 75 General Purpose Hoist. Describing this unit, Mr. Pepper said: "The American is the Cadillac of hoists; there is nothing that can touch them in operation, safety and long wear."

There is no substitute, of course, for the skill of a good operator. But you can make any *good* man a *better* man, and make some wonderful changes in your cost records, by investing in finest quality hoists. That means—buy American . . . the most complete line of hoists, the largest-selling line, the greatest *money-makers* you can own.

Modernize...economize...with

American Hoist
& Derrick Company
ST. PAUL 1, MINNESOTA

2 **Mail this coupon** 2101

American Hoist & Derrick Co.
St. Paul 1, Minnesota

● Please send catalog on

AMERICAN GENERAL PURPOSE HOISTS

NAME_____

COMPANY_____

ADDRESS_____

CITY_____ STATE_____

Ever wonder why you *never* see a scowling, fagged operator on the Baker, A-C team? Here's why:



They just plain love that "doze-in-your-armchair" ease of control; that positive hold without throttle jockeying; that fraction-of-an-inch accuracy . . . that quick, direct lift; that positive down-pressure which puts almost all the tractor weight on the cutting edge; *and* the "roll-action" of the blade which leaves more tractor power for push. Because "Easy DOZE It!"





That's why you see the Baker, A-C team more and more wherever dirt has to be moved fast and efficiently. When operators *prefer* it, you can count on it being the best money-maker.



Specify Baker Bulldozers, Gradebuilders or Root Rippers for your new A-C Tractors . . . Baker makes engine-mounted hydraulic control models and cable-control models for the entire line of Allis-Chalmers crawlers. See your Baker, A-C Dealer. THE BAKER MANUFACTURING COMPANY, Springfield, Illinois.





P.S.: Baker is the PIONEER and the SPECIALIST in bulldozers

MARION SHOVEL . . .

Continued from page 78

the swing units. These are all in line direct-connected to a 600-hp 1,800 rpm 3-phase 2,200- or 3,810-v main drive motor. The exciter is a separate motor-generator set driven by a 25-hp 440-v 1,800-rpm motor.

Auxiliary power for air compressors and hydraulic rams is obtained from a 75-KVA, 3-phase, 60-cycle, 2400/4160-v to 240/480-v transformer. The lights are supplied from a 5 KVA, 4160 to 115/230-v single phase transformer.

On the full electric, the main power line is brought to the machine through oil-immersed collector rings mounted on the lower frame. This power is brought directly to the main motor through suitable switching equipment. Auxiliary units on the machine obtain their power from the 3-phase, 75-KVA transformer. The high voltage rings are designed to take up to 5,000 v directly from the power source.

A set of low-voltage slip rings is mounted between the upper and lower frames for furnishing the power and control circuits to the lower frame solenoid valves for steering and brake and the oil pump motor. Two propel brakes are used.

On the revolving frame, holding brakes and clutches are simple, reliable air cylinder types. Solenoid valves control application or exhaust of air from these clutch or brake cylinders. The hoist drum disk can be either engaged or disengaged from the hoist machinery by an air-cylinder-operated clutch.

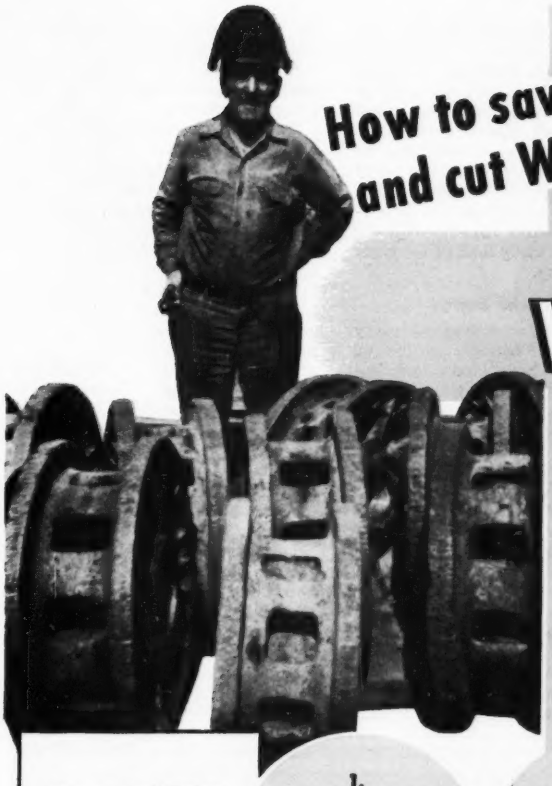
Diesel Power Units

The first shovel was built around three diesel engines furnished by the customer. Marion engineers say they probably will use a different arrangement of engines and generators if they build more diesel-electrics, but here's a description of that first rig.

For hoisting, a GM Model 12-567 diesel engine, rated at 1,080 hp, drives a 336-kw 1,100-v (maximum) generator. A 450-hp GM 8-268-A engine is connected directly to two generators serving the swing and crowd functions. The crowd generator is rated 56 kw at 600 v. A 56/56 kw split-output generator furnishes power for the two swing motors. Also, this last engine drives a 15-kw 125-v exciter through V-belts for furnish-

(Continued on page 82)

How to save Parts Cost and cut Welding Time . . .



HARDFACE with VICTORALLOY

Take a tip from the job superintendent who repaired these worn idlers. Rather than wait until they were completely worn out, he hardfaced with VICTORALLOY as soon as one pass was required to bring them back to size. His welders estimate VICTORALLOY cut welding time 25 to 50% and saved rod because:

One pass and 100 lbs. of VICTORALLOY rebuilt these ten track idlers, thus saved costly replacement!

1. VICTORALLOY has a high burn-off rate—6 lbs. per hour.

2. VICTORALLOY's high rounded bead deposits as much metal in one pass as most other rods do in two.

3. VICTORALLOY leaves no slag, thus eliminates chipping and cleaning on multiple pass work.

VICTOR
Welding and Cutting Equipment
Since 1910

For better welding equipment and supplies look for the VICTOR dealer sign. Dealer inquiries invited.

Idlers, tracks, sprockets and other parts hardfaced with VICTORALLOY "wear-in" with a smooth, highly-polished surface, last twice as long as new parts. See for yourself how VICTORALLOY saves parts cost, rod and welding time. Order a supply TODAY.

VICTOR EQUIPMENT COMPANY

3821 Santa Fe Ave.
LOS ANGELES 58

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CHICAGO 7

ing dc excitation for the main motor fields and the dc control devices.

The third diesel is direct-connected to a 100-kw, 3-phase, 60-cycle, 440-v alternator. The engine is a GM, 3-268-A rated at 150 hp. This unit furnishes ac power for the main motor blowers, air compressors, lighting transformers, oil pumps, radiator fan motor and other accessories.

The hoist generator is a special high-voltage unit designed to furnish 1,100 v at no-load. It has the drooping voltage characteristic designed into all Ward-Leonard shovel generators. Because of space limitations it was necessary to make the hoist generator exceptionally short; therefore, it was decided to make it a high-voltage unit to handle two motors in series. This generator has an extremely heavy flywheel, weighing 10,000 lb, mounted with the armature between the two generator bearings.

It was calculated, due to the extreme weight of the flywheel, there would be sufficient gyroscopic action to raise the armature from the end bearing farthest removed from the engine when the shovel cab rotated. To overcome this it was necessary to design the generator unit with one sleeve bearing and a steadying anti-friction bearing.

The heavy flywheel is required to absorb high lowering, or plugging, loads, developed when dropping the bucket. Since the diesel engine cannot absorb very much regenerated power, calculations indicated that it would be necessary to furnish a heavy flywheel. The flywheel also maintains fairly constant hoist engine speeds under the widely fluctuating load of the hoist while digging.

Flywheel Absorbs Energy

The engineers felt that the heavy flywheel would be sufficient to take care of the regenerated power developed when lowering the dipper, but as an added precaution, they also developed a dynamic braking control that would permit the regenerated power to be absorbed by a resistor. In practice, it was found this dynamic braking scheme could be used very satisfactorily, but the flywheel did the job so well that the dynamic braking control was not used.

So far as the swing and crowd unit is concerned, the regenerated power could be handled by a small flywheel. Aside from trying to make the generating unit as short as possible without special design, the crowd-swing unit offered no serious problems.

All of the main electric equipment was manufactured by the General Electric Co.

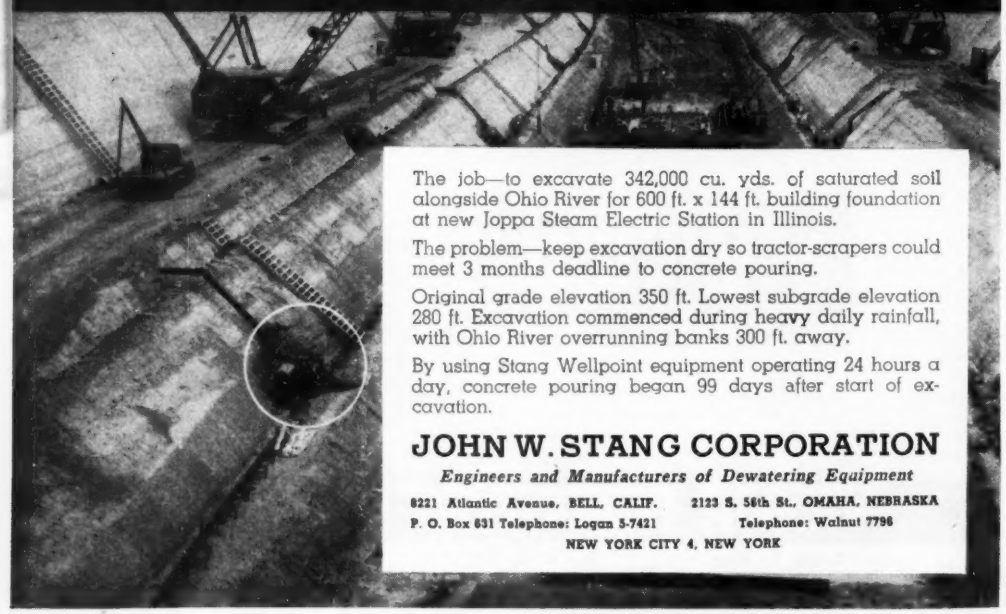
Standard crawlers are 26 ft long, 21½ ft in over-all width, have a 42-in. shoe width and give a ground bearing pressure of 30.7 psi. Crawler shoes are cast manganese steel with hardened steel pins. Top and bottom crawler rollers are hardened steel forged. Side frames are all-welded with built-in gear cases. Drive sprockets are cast manganese steel with square bore for driveshaft.

The lower frame is all-welded steel. Propelling mechanism is equipped with dual hydraulic brakes. Steering clutches are operated by the same hydraulic unit, electrically controlled. The roller circle, 160 in. dia, carries 45 9-in. rollers held in alignment by spacers. The center journal is a 17-in. forged alloy sleeve, threaded at its upper end for adjustment and bored and bushed for the vertical propel shaft. This shaft is bored for an electrical conduit.

The upper frame also is all-welded steel, with bearings for center journal and main rotating

(Continued on page 142)

STANG DOES THE "IMPOSSIBLE"



The job—to excavate 342,000 cu. yds. of saturated soil alongside Ohio River for 600 ft. x 144 ft. building foundation at new Joppa Steam Electric Station in Illinois.

The problem—keep excavation dry so tractor-scrapers could meet 3 months deadline to concrete pouring.

Original grade elevation 350 ft. Lowest subgrade elevation 280 ft. Excavation commenced during heavy daily rainfall, with Ohio River overrunning banks 300 ft. away.

By using Stang Wellpoint equipment operating 24 hours a day, concrete pouring began 99 days after start of excavation.

JOHN W. STANG CORPORATION

Engineers and Manufacturers of Dewatering Equipment

8221 Atlantic Avenue, BELL, CALIF. — P. O. Box 631 Telephone: Logan 5-7421

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NEW YORK CITY 4, NEW YORK



Traffic Keeps Right on Rolling While Asphaltic Concrete Is Laid as . . .

Texas Widens and Resurfaces Highway

By E. O. BEATIE, The Texas Company

ASPHALTIC CONCRETE recently was employed to advantage in the widening and resurfacing of long sections of U. S. Highway 90 between the industrial cities of Houston and Beaumont, Texas. U. S. 90 serves the heart of an area busy with oil production and refining, manufacturing of oil-field equipment, processing of chemicals and lumbering.

All these activities spell heavy traffic on this highway—which had become too narrow for safety and also had some badly broken portland cement concrete sections that called for repair.

The use of hot-mix asphaltic concrete permitted widening and resurfacing operations to be accomplished without interrupting the steady flow of traffic. It was necessary only to open up trenches ahead of placing operations for minimum distances. Each day's completed lanes were given to traffic immediately.

The contractor, Gulf Bitulithic Co. of Houston, used 79,210 tons of hot mix on the 19.8-mi stretch.

Gulf Bitulithic employed two hot-mix plants for production: a hot-mix trench widener and two special trench rollers for the widening strip. For the resurfacing operation the chief pieces were a motor grader and two hot-mix mechanical spreaders. The job consumed 3,220 tons of 90-penetration asphalt and 41,260 gal of RC-2 Cutback Asphalt for tack coat.

Two 20-ft concrete sections of U. S. 90 northeast of Houston were included in the project. One section carries an average of 6,340 vehicles per 24-hr day; the other 5,030 vehicles per 24-hr day. About 31% of the traffic is commercial,

(Continued on page 86)



APSCO WIDENER PLACES FIRST COURSE of type A asphaltic concrete hot mix in 4½-ft widening strip along U. S. Highway 90 in southeastern Texas. The widening trench was prepared with a scarifier and an 8-yd scraper. Mix was placed in the trench in four courses.

4 wheel drive PAYLOADER



It takes traction in all kinds of going to get jobs done on schedule and at a profit . . . traction on which you can rely the year 'round . . . traction that handles big loads quickly, easily and economically.

Hundreds of contractors own 4-wheel drive Model HM "PAYLOADERS" and know what they can do. A large percentage of these contractors have placed repeat orders—a fact that speaks louder than words of their satisfaction with the traction, flotation and all around ability of this unusual wheeled tractor shovel. They also value its mobility to get to the job fast under its own power . . . its ability to do so many jobs—to dig, load big hauling units, bulldoze, spread, backfill, carry, lift, lower, pull and push.

Owners report that their drivers like the Model HM because it rides with ease and operates with ease—thanks to the big pneumatic tires, large comfortable seat, power-boosted steering and fingertip hydraulic control. Once you see this "PAYLOADER" in action, you'll want one for your jobs.

Contact your "PAYLOADER" distributor today or write The Frank G. Hough Co., 706 Sunnyside Ave., Libertyville, Illinois.

...has traction you can trust









plus 16 M. P. H. TRAVEL SPEED

Write for catalog on the 1½ yd. Model HM PAYLOADER or six smaller sizes down to 12 cu. ft. There is no obligation.



SAY "HUFF"

HUFFMAN PAYLOADER®

COMMENT
from the
BUTLER ENGINEER

H-Bomb Baby Born at Butler Bin

I'm kind of a proud papa these days. Not to the point of stuffiness I hope; just walking around in a genial glow. But the baby *is* terrific and I simply have to tell you about him!

He's the control system we designed and built for the super-super automatic, completely interlocked, push-button operated Butler Central Mixing Plant which will pour concrete for the H-Bomb plant.

That baby was full grown at birth. Here's what he does:

He offers a choice of 5 predetermined batches at the turn of a selector knob. Hit push-button and batch starts. Filling gates open. Aggregates, cement and water flow until they reach exact weight. Each of 7 dials prints record of batch. Lights flash when balance is reached. Nothing can go wrong for it's all interlocked against every possible sin of omission and commission. A chimpanzee just hitting push buttons at random could turn out nothing but the right batch. Much more to tell but no room. Anyway, everything's as automatic as a trip to hell.

I'm afraid I stretched a point when I claimed sole parenthood. It always takes more than one to produce a baby. Here at Butler Bin all of us exchanged cigars at the birth for really everyone had a part in the conception. Sounds immoral, but you know what I mean.

Yours for that ounce of H-Bomb prevention,

The Butler Engineer

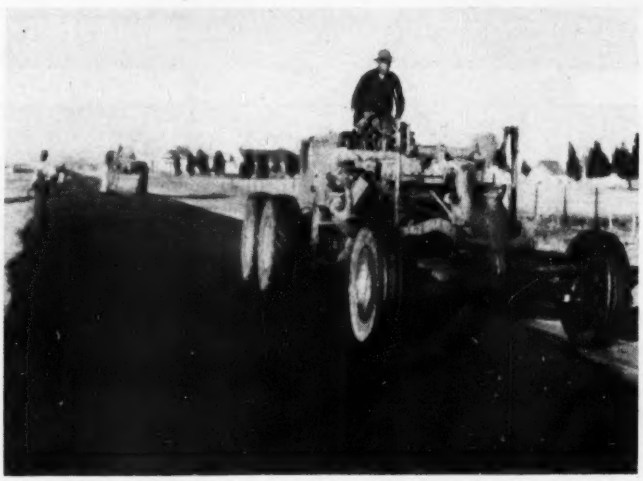
BUTLER BIN COMPANY
WAUKESHA, WISCONSIN

P.S. Want to see pictures of our baby? We'll be proud to send 'em. Just ask!

TEXAS HIGHWAY . . . Continued from page 83



BUFFALO-SPRINGFIELD TRENCH ROLLER compacting first course of widening strip. Mix was applied at the total rate of 1,000 lb per sq yd to form a 10-in. thickness.



FIRST OR LEVEL-UP COURSE for resurfacing is placed by a Caterpillar grader for the full width of the highway, now measuring 24½ ft. Slabs were mud-jacked before resurfacing.

and approximately 11% of it represents the heaviest axle loads on highways in the state.

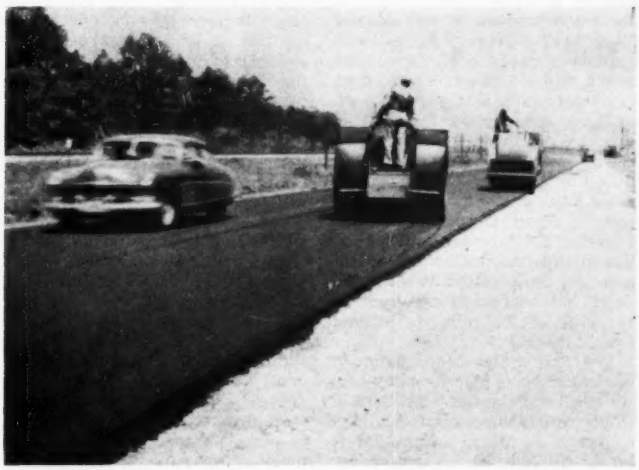
Plans called for widening the northerly side of the 20-ft 9-6-9 portland cement concrete pavement 4½ ft with modified Type A hot mix—100% passing the 2-in. screen—to a compacted depth of 10 in. The over-all roadway width then was to be resurfaced with 3½ in. of modified Type D hot mix, 100% passing the ½-in. screen. Bridge approaches were widened on both sides and curves on the inside.

In Texas, hot mix is let normally with aggregate and asphalt as separate bid items on the ton basis. For this work, which permitted the use either of native iron ore aggregate, shell, or uncrushed gravel, the asphaltic concrete was left on the "mix" basis, different asphalt contents would be required by the different aggregate types. The contractor elected to use imported uncrushed gravel, imported sand and local field sand for both Types A and D.

Some concrete sections of U. S. 90 had been undersealed with 30-



PLACING OF THE LAST COURSE in the resurfacing operation is done by an Apsco paver. Buffalo-Springfield 10-ton three-wheel roller follows to compact the Type D resurfacing mix.



TRAFFIC ROLLS IN ONE LANE as an 8-ton tandem and a 10-ton three-wheel roller finish the last resurfacing course. Hot mix for the three courses totaled about 350 lb per sq yd.

penetration asphalt to fill voids beneath the pavement just prior to widening and resurfacing—but not to level the slabs. State maintenance forces mud-jacked all rock ing slabs for steadying and for filling voids underneath, both before and during the resurfacing with hot mix.

Texas specification Type A hot mix for widening was produced in a Warren 400 weight-batching type plant, equipped with a 3500-lb pug mill. Uncrushed gravel and sand were mixed with Texaco 90-penetration asphalt at a mixing temperature of about 250 deg F. The asphalt content formed about 3.4% of the mix, total weight basis. A lower mixing temperature could be employed here because the thickness of the widening strip was such as to retain a suitable rolling temperature.

The 4½-ft widening trench was prepared with a scarifier and an 8-yd scraper. Type A hot mix was placed in the trench in four courses through an Apsco widener. The mix was applied at the total rate of 1,000 lb per sq yd, to form the 10-in. compacted thickness. Roll-

How you

SAVE ON HOIST MAINTENANCE



Safety-Pulls are available in 10 sizes with capacities from 1,500 to 30,000 lb.

Here are just a few of the "extras" that keep Coffing Safety-Pull Ratchet Lever Hoists on the job — and save on maintenance costs.

- Hoist frame is certified malleable iron — your guarantee of lasting durability.
- Sprocket and ratchet are special alloy drop-forged steel, heat-treated and ground.
- Chain is specially designed for Coffing Hoists to meet U.S. Navy specifications — and tested at 100 percent overload.
- Hooks are drop-forged, heat-treated alloy steel — will not break or straighten out.
- "Safety Valve" handle will bend before hoist is overloaded beyond maximum safe limits.
- All Safety-Pulls are factory-tested at twice their rated capacity.

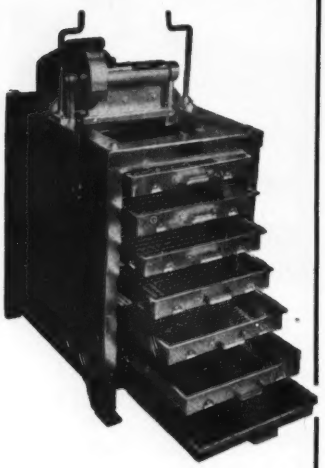
Find out more about the hoists that stay on the job — and out of the repair shop. Write Dept. D3SP.

COFFING HOIST CO.
DANVILLE, ILLINOIS

Quik-Lift Electric Hoists • Hoist-Alls • Mighty-Midget Pullers • Spur-Gear Hoists • Differential Chain Hoists • Load Binders • I-Beam Trolleys

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Meet Exacting Specifications
QUICKLY—EASILY—AT LOW COST
with
GILSON
Mechanical
TESTING SCREEN



Where exacting specifications must be met the GILSON Screen substitutes assurance for guesswork.

• This machine has been designed for efficient sizing of test samples of crushed stone, gravel slag and similar materials. It accommodates up to one cubic foot of sample, making from two to seven separations simultaneously, in five minutes or less. Smaller amounts of very fine materials may be handled efficiently for research or special mass separation jobs down to 100-mesh or finer.

The screen trays and dust pan are built to withstand hard usage—and will not warp or bend. All trays and dust pans are balanced to the same tare weight—thus eliminating need for transferring sample before weighing.

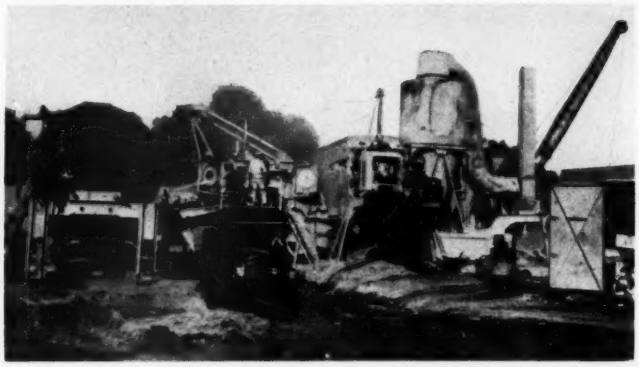
These and many other time and cost saving features recommend your full investigation of the GILSON Screen.

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Please send me bulletin covering details of construction and operation of GILSON TESTING SCREEN.

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COMPANY .....
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STATE ..... CM&E-3-52



HOT-MIX PLANT for Type A mix is Warren 400 weight-batcher with a 3,500-lb pug mill. Type D mix was produced by Barber-Greene continuous plant, supplemented by the Warren.

ing on the westward section was done by a Buffalo-Springfield trench roller, followed by an 8-ton tandem, and on the eastward section, by an Apsco trench roller and the 8-ton tandem. A tack coat of Texaco RC-2 Cutback Asphalt was applied between hot-mix courses at the rate of 0.05 gal per sq yd, or at a total rate of 0.15 gal per sq yd.

Texas specification Type D hot mix, 3½ in. thick, for resurfacing the new 24½-ft roadway, was produced by a Barber-Greene continuous mixing plant, supplemented by the Warren 400. Uncrushed gravel and sand were mixed with Texaco 90-penetration asphalt at a mixing temperature of about 325 deg F. The asphalt formed from 4.0 to 4.6% of the mix, on a total weight basis.

The first or level-up course of resurfacing was placed with a motor grader at the rate of about 100 lb per sq yd. The second and third courses were placed in two 12¼-ft lanes through an Apsco paver and a Barber-Greene mechanical spreader at the rate of about 125 lb per sq yd for each course. There was some departure from the above application rates, however. A tack coat of Texaco RC-2 Cutback was applied before each hot-mix course at the rate of 0.05 gal per sq yd, or at a total rate of 0.15 gal per sq yd. Rolling of the Type D resurfacing mix was done with an 8-ton tandem and a 10-ton three-wheel roller.

Although mud-jacking to hold the old pavement slabs and to fill voids underneath was done before resurfacing, it became necessary in places to mud-jack later through the second and third hot-mix courses, to support slab sections which had continued to pump. While the possibility of disturbing the hot-mix courses existed in these later operations, no damage occurred.

For both types of hot mix, a 35 minimum Hveem Stabilometer stability and 94 and 98% densities were specified. Control of mix design was maintained in a field laboratory by screen analyses and density determinations. Hveem stability tests were made at the main laboratory in Austin on the field-molded density specimens.

According to final estimates, the in-place unit costs of the completed hot-mix items are shown in the accompanying table.

The work was performed in District 12 of the Texas Highway Department (Jim Douglas, district engineer), under the direct supervision of Cooper Dewey, senior resident engineer. The low bid submitted for the total work, including lengthening of structures, was $483,691.63.

FINAL ESTIMATES

Item	Quantity	Unit Cost in Place	Cost
Type A hot mix	30,907.90 tons	$5.19	$160,412.00
Type D hot mix	48,302.11 tons	5.26	254,069.10
Tack Coat	41,260 gallons	0.17	7,014.20
		Total Cost	$421,495.30



MAKE REPAIRS ON HEAVY DUTY HOSE UNITS THIS EASY WAY!



ALL STEEL
EASY TO ASSEMBLE
MINIMUM FLOW RESTRICTION
POSITIVE LEAKPROOF CONNECTION

WEATHERHEAD OFFERS A COMPLETE LINE OF HOSE ASSEMBLIES

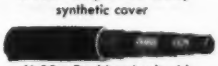
Heavy-duty flexible hose for use with Weatherhead reusable steel hose ends includes low, medium, medium-high and high-pressure hose. Five types of hose plus two hose ends service all standard installations.



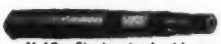
H-17—Two-ply braided fabric, synthetic cover



H-108—Single-wire braid, synthetic cover



H-25—Double-wire braid, synthetic cover



H-69—Single-wire braid, cotton cover



H-9—One-ply braided fabric, synthetic cover

CAPT. EASY Says it's EASY!

Weatherhead high-pressure hose ends enable you to service all heavy-duty equipment—yet keep your stock investment at a minimum.

EASY to assemble...

Hose ends can be replaced using ordinary bench tools. No special equipment needed.

EASY to stock...

No need to carry a big inventory of "made-up" hose-and-fitting assemblies. Keep hose in bulk, cut to size and assemble with hose ends as needed.

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You save because you keep only a minimum inventory—assemblies are made up as needed.

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The EASY line to handle is...

The Mark of Quality
WEATHERHEAD
ON EVERY CAR

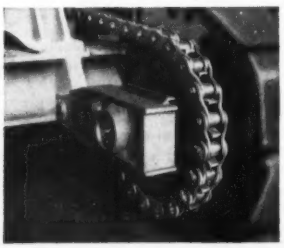
Teaming up for bigger profit possibilities





CHECK THESE FEATURES

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- √ Long, Wide Crawlers
- √ Alloy Cast Bases
- √ Tandem Drums
- √ Power Booster Clutches
- √ High Line Speeds
- √ Wide-Vision Cab
- √ Power Dipper Trip
- √ Pin-Connected Boom



Crawler outboard bearing assembly

It isn't unusual to find two or more BAY CITY machines teaming up for bigger profit possibilities because so many BAY CITY owners have been *repeat buyers* for up to 35 years. And, it isn't unusual to find scores of BAY CITY shovels, cranes and draglines with records of 20 to 25 years of service. No single factor makes them so long-wearing . . . so long lasting. It is a combination of heavy-duty design and construction features that contribute to this extremely long life and satisfactory service.

The BAY CITY Balanced Design plus the many operating and maintenance advantages have been engineered with bigger value and dependable performance. We would like you to know the full story. Why not see your nearest BAY CITY dealer or write today for catalog. BAY CITY SHOVELS, INC., BAY CITY, MICHIGAN

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BAY CITY



SHOVELS • CRANES • HOES • DRAGLINES • CLAMSHELLS

Large Reservoir-Well Scooped Out Inside Steel Sheet-Piling Enclosure

By H. G. STAIRS, Principal Office Engineer
Cartier-McNamara-Mannix-Morrison-Knudsen



CIRCULAR WELL IS BUILT by driving steel sheet piling for 40 ft and then scooping sand out of the interior. Resulting reservoir contains more than 100,000 gal of water.

WHEN THE POPULATION of the railroad construction camp at Seven Islands, Quebec, doubled last summer, the base camp found itself face to face with a serious shortage of water for domestic uses and insufficiently protected against fire hazards. Site tests that located a reliable water table and ordinary construction techniques eliminated the shortage quickly.

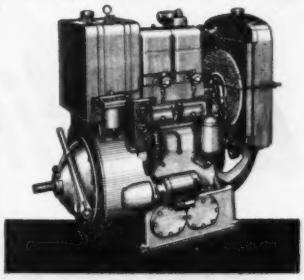
A large reservoir-well, 36 ft in dia and 34 ft deep—dug and maintained at low cost—now provides an ample supply of water and suitable fire protection. It replaces completely the inadequate former system which drew water from 20 wellpoints driven into sandy soil.

Construction of the Quebec North Shore and Labrador Railway from Seven Islands, on the Gulf of St. Lawrence, to iron ore deposits in Labrador around Knob Lake was begun in the fall of 1950. General contractors are the combine of Cartier-McNamara-Mannix-Morrison-Knudsen.

The location chosen for the permanent Base Camp at Seven Islands is a flat section some 10 acres in extent about 2½ mi east of the town, and about ¾ mi inland from the Gulf of St. Lawrence. Elevation varies between 90 and

(*Continued on page 94*)

10 REASONS why your next power unit should be a NORDBERG Diesel



1. Expressly developed to meet the need for simple, compact engines of small horsepower.
2. Low initial cost.
3. Choice of 1, 2, or 3-cylinder sizes, ranging from 10 to 45 H.P. or 6 to 30 K.W.
4. Choice of generator, centrifugal pump, stub shaft, or clutch power take-off.
5. Each unit is complete, self-contained, ready to operate.
6. Built to the same exacting standards as the larger Nordberg Diesels.
7. Maximum operating economy—often pays for itself in less than a year.
8. Simple to operate, easy to service, no trained operators necessary.
9. Heavy duty construction throughout for long life.
10. Thermostatically controlled cooling system, heavy duty oil bath air cleaner, fuel and lubricating oil filters and lube oil cooler are all STANDARD on Nordberg units.

NORDBERG MFG. CO., Milwaukee, Wisconsin

NORDBERG
BUILDERS OF AMERICA'S LARGEST LINE OF HEAVY DUTY DIESELS

MAIL THIS COUPON TODAY

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Please send literature describing the full line of Nordberg "4FS" Diesel Power Units.

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Company_____

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Sinclair Litholine PROVED in wheel bearing tests

THE critical test of any multi-purpose grease is in its performance in the wheel bearings of heavy-duty mobile equipment. Sinclair LITHOLINE® Multi-Purpose Grease has been proven an outstanding heavy-duty wheel bearing lubricant in exhaustive, year-round tests.

One test was made in a Mid-West city bus line. An inspection after 20,000 miles showed the bearings were smooth and well-lubricated. There were no signs of scratching, pitting, heat spots, gum or varnish. Sinclair LITHOLINE's original character was well-maintained – there was no slumping in the bearing or housing, no softening or liquefying, no separation and no leakage through seals.



This safe, sure lubrication of one of the most vital points of heavy-duty mobile equipment . . . and its outstanding performance at all other lubrication points . . . prove that Sinclair LITHOLINE is a real multi-purpose grease . . . winter and summer.

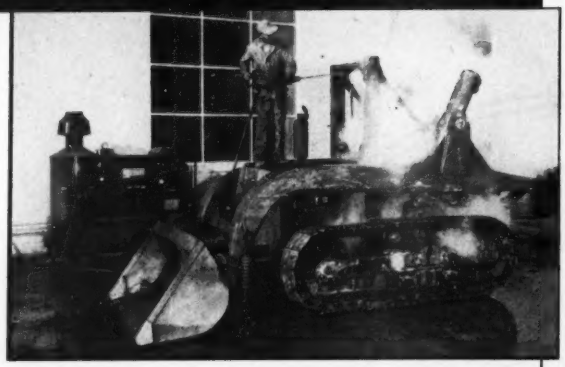
Send for a free folder describing demonstrations of the superiority of LITHOLINE. Contact your local Sinclair Supplier or write Sinclair Refining Company, 600 Fifth Avenue, New York 20, N. Y.

for every grease lubrication job... **SINCLAIR**



LITHOLINE

CLEANS TRACTOR-DOZERSHOVEL IN 2 HOURS WITH MALSBARY 300



5 Cleaning Actions, Plus Pressures To 400 Lbs., Blast Mud, Grease & Tars, Without Compound Changes

Previous cleaners took 6 hours to clean a TD9 tractor-dozershovel. Now Merrill-Brose Co., IHC dealer, Oakland, Calif., does the job in 2 hours with a MALSBARY 300 Heavy-duty Cleaner.

Here's why—

EXCLUSIVE PATENTED PUMPING SYSTEM replaces steam as source of working pressure on MALSBARY high pressure Models 250, 300 and 500. Cleaning efficiency is not limited to steam formed in the coils.

5 DISTINCT CLEANING ACTIONS. High pressure steam cleaning (to 325°F.); high pressure hot water; high pressure cold water; low pressure wet steam; and low pressure warm water. Only MALSBARY offers you all 5.

PRESSURES TO 400 LBS. This is 2 to 4 times higher than steam vapor cleaners; enables MALSBARY to do jobs other cleaners cannot touch, such as removing road tars without changing to special compounds. This high pressure permits simultaneous use of hot solution gun and cold water gun on Models 300 and 500.

All MALSBARY heavy-duty models—250, 300 and 500—develop hot solution in 2 to 3 minutes; are available with oil or gas-fired burner; gas engine or electric motor drive; stationary, portable or trailer mount.

See for yourself how MALSBARY Cleaners cut cleaning time—check coupon and mail TODAY.

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For small shops, MALSBARY 110 & 220 Steam Vapor Cleaners provide quick, efficient cleaning on motors, chassis, parts and maintenance jobs. Simple, rugged, gadget free.

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- ☐ Free booklets on MALSBARY Cleaners.
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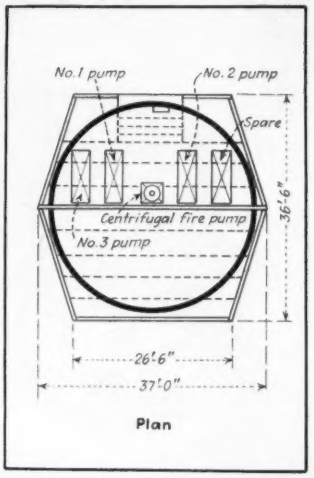
QUEBEC RESERVOIR . . .

Cont'd from p. 91

95 ft above lowest normal tides; the ground slopes gently southward toward the sea.

The soil on the site, and for a radius of several miles in all directions, consists of a fine sand of unknown depth — so fine that it is unusual to see even a pebble anywhere in it.

It was noted upon establishment of the camp that the same soil formation was found in the town of Seven Islands and at the airport some 3 mi east of the campsite. In both places, ample water appeared to be available at depths depending on the height of land, at from 5 to 10 ft below high-water mark in the Gulf. A well was driven on the campsite to a depth of 98 ft but, unfortunately, the drilling equipment broke down,



THREE SERVICE PUMPS, one spare and fire pump are on inside platform.

and the project had to be abandoned just when it appeared successful.

A fresh start was made directly south of the camp 300 ft back from high-water mark on the shore, and ample water was found for the estimated camp requirements at a depth of 19 ft below grade and 5 ft below high-water mark. Analysis of the water showed that it was absolutely fresh, although the well was close to salt water, and that it was well within Government requirements in all respects for a safe water supply.

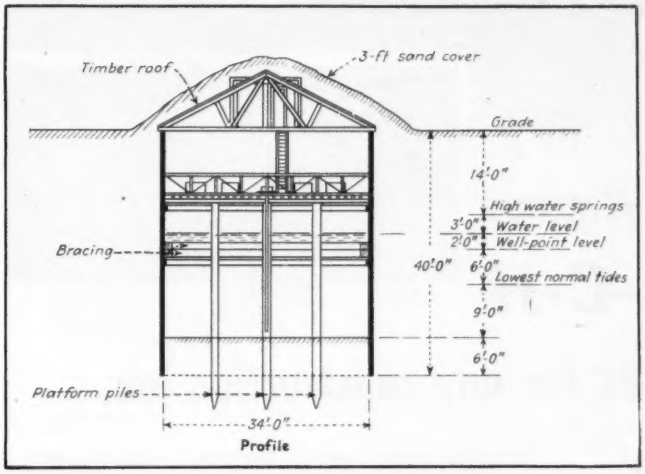
Accordingly, 20 wellpoints were sunk, spaced at 4- to 6-ft intervals in a straight line parallel to the shore and connected to a 4-in. manifold. This, in turn, was con-

nected to a Fairbanks-Morse Hydro-Pneumatic pumping system consisting of a horizontal, single-piston, double-action pump capable of delivering 28 gpm against a 160-ft head and two 2,000-gal storage tanks. These storage tanks were operated under air pressure with a range varying between 60 and 80 psi and acted as a storage pressure reservoir for the system.

Power for the pump was supplied by a 3-hp electric motor and a 7.5-hp air-cooled gas engine, the latter serving as an auxiliary unit in the event of power failure. In addition to this pump, a gasoline engine-driven centrifugal pump was installed on the line at the campsite to provide additional pressure for fire protection purposes.

Acting on the advice of P. H. Bergeron, mechanical superintendent of the company, a test well approximately 25 ft deep and 50 ft in dia was dug about 200 ft westward of the wellpoints' location. As had been found before, the water level settled down at 5 ft below high-water mark. A heavy-duty pump was put into operation, and it was found that the flow into the well was in the vicinity of 90 gpm and that the water was fresh and free from impurities.

It was decided to proceed with the construction of a reservoir on the test-well site, and plans were prepared for the construction of a well 36 ft in dia and 34 ft deep. Plans called for steel sheet piling driven to a depth of 40 ft. Steel sheet piling was chosen because it would form a sand-tight shell which would be impossible to obtain with wood piling and uneconomical by any other means.



TIMBER ROOF AND SAND COVER protect the sheet-pile reservoir. Low winter temperatures do not penetrate inside. Pump platform rests on piles 4 ft above the water level.

This system provided satisfactory service until midsummer 1951, at which time the unexpected doubling of the camp population put such a strain on the supply that the water table surrounding the wellpoints dropped by more than a foot, causing a definite water shortage. Tests on the system showed further that the 4,000-gal reservoir could not supply enough water in the event of serious fire.

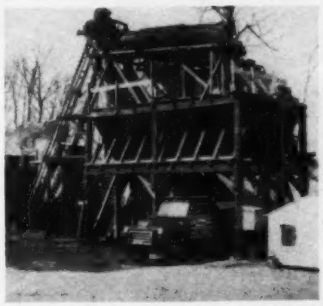
At this time permanent railway offices and staff quarters were being built in close proximity to the base camp and, as it was considered desirable to provide additional fire protection to the base camp garage area, it was decided to combine the three areas, if sufficient water could be found to supply them.

Due to the shortage of steel, 40-ft lengths of piling could not be obtained, so a number of odd pieces had to be welded together to obtain the required lengths. For the same reason, some ⅜- and ⅝-in. stock had to be used which, because of the bad seam fit, made driving difficult. In some cases the seams parted, due to the outside pressure of sand, which necessitated welding in awkward places and made pumping necessary to hold the water down while this was being done.

Piling first was driven to a depth

(*Continued on page 140*)

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IT'S PROFITABLE
IT'S RELIANCE

Clean Sand and Gravel need not cut your job-profits! Get them at LOWEST COST and get them CLEAN with Reliance Units—strong, simple, rugged, greatly improved for today's faster operation. With Reliance Units you can build exactly the right plant to meet your requirements, and it can be easily moved anywhere. Let us tell you more about Reliance Advantages—*write for Catalog 48.*

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Rock Crushers, Bucket Elevators, Revolving Screens, Storage Bins, Pulverizers, Chip Spreaders, Heating Kettles, Bin Gates, Feeders, Belt Conveyors, Grizzlies, Air Separators, Sand & Gravel Spreaders, Wash Boxes.

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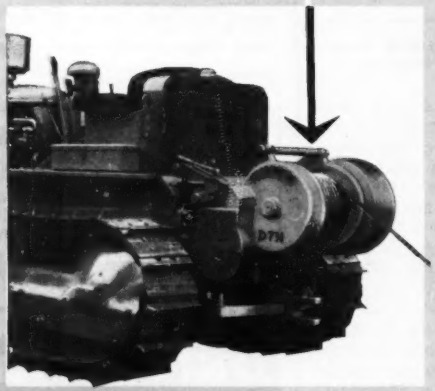


Winching out, and simultaneously loading, a scraper outfit on a construction project in Tennessee. Hyster D7N towing winch mounted on a Caterpillar D7 tractor equipped with 7S dozer and front cable control.

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HYSTER Winches have *R-E-A-C-H* and *Pull Power* for any construction job...



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Construction men all know the job insurance provided by a Hyster winch mounted on a Caterpillar diesel tractor. The winch MOVES heavy equipment; RESCUES mud-bogged equipment; INSURES against work stoppage or down-time on any project using equipment; PULLS the tractor itself out of mud or other situations that have immobilized the unit.

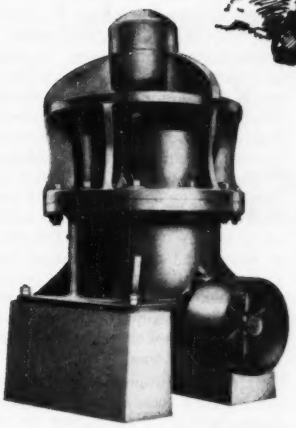
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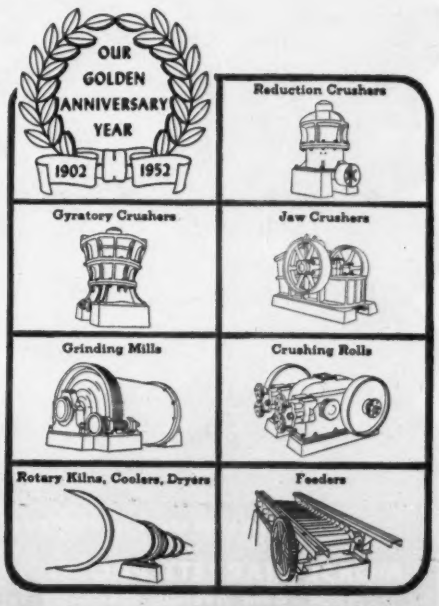


there's nothing new...

about producing aggregate on the job. In the 19th century, road builders regularly employed old men and boys to do this laborious work by hand.

The Traylor TY Reduction Crusher is an example of how experience contributes to building superior machinery. All the details are in Traylor Bulletin 6112.

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A TRAYLOR LEADS TO GREATER PROFITS

On-the-Job
CONTRACTOR-LABOR RELATIONS

by LEON B. KROMER, JR.

Contractors and the Wage-Hour Law

IF YOU REPAIR industrial plants, build highways or bridges or undertake plant expansion projects, it will be well to review your payroll records and pay practices. Latest reports from Wage-Hour regional offices of increases in violations of the Fair Labor Standards Act are further highlighted by the recent announcement from the New York Regional Office of violations by a number of contractors on the construction of the New Jersey Turnpike last year. According to the New York Regional Office, these contractors paid less than the minimum rate, paid no overtime compensation to a number of employees, and have now voluntarily agreed to pay back claims of almost $17,000.

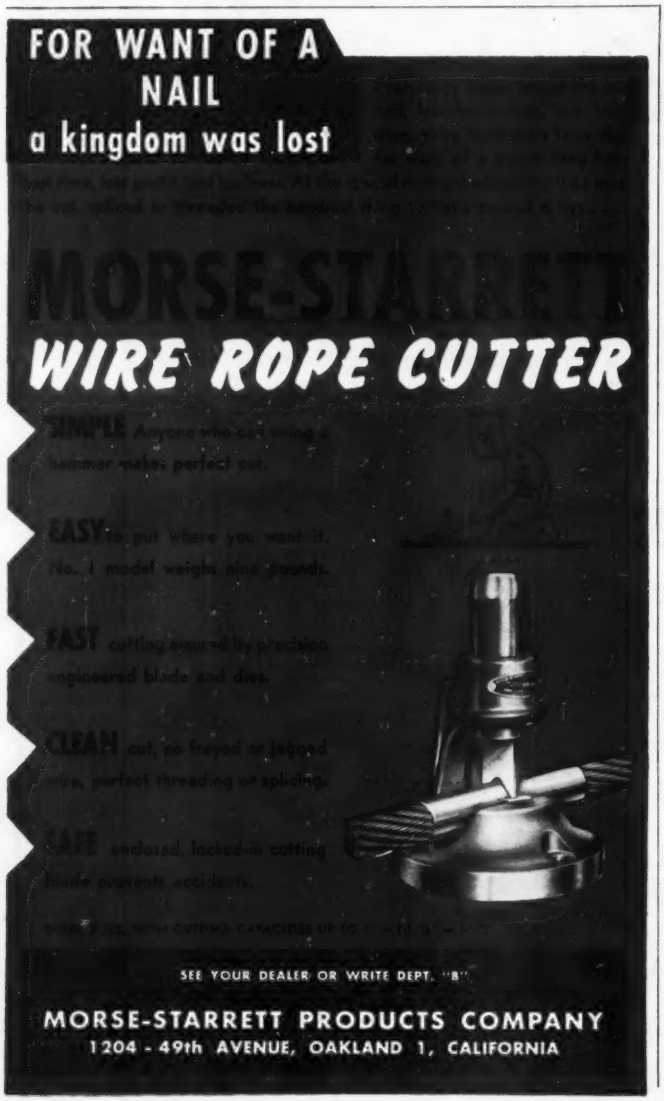
Many of these violations undoubtedly result from ignorance of the law and of the types of employees covered. However, when a Wage-Hour Inspector drops around for a spot check, or when an employee files suit, ignorance of the law is no defense.

Briefly, the Wage-Hour Law covers employees (other than bona fide executive, administrative or professional employees) engaged in commerce, in the production of goods for commerce or in closely related occupations directly essential to production of goods for commerce. It requires payment to such employees at a basic rate not less than $.75 per hr and time and one-half for all hours worked in excess of 40 in any work week. Overtime is calculated on the basis of total hours worked in one single regular work week. Longer hours worked in one week cannot be offset against shorter hours worked in a previous or following week.

It is not difficult to understand why many contractors are confused when an employee on one construction job is not covered, but becomes covered when—still doing the same work—he is transferred to another project. This stems from the fact that as interpreted by the Wage-Hour Administrator, employees working on "new" construction are generally exempt from coverage whereas those on reconstruction, expansion or repair to existing facilities are covered. Even on new construction some employees may, because of the nature of their work, be covered. Example: a stenographer who writes letters that go out of the state.

New construction is usually original construction such as the erection of a new plant from the ground up. Even though this plant is to serve interstate commerce, the courts have held that the actual work of its construction is too remote from that end result to consider that the contractor's employees are doing work relating to interstate commerce. On the other

(Continued on page 100)



NOT FOR THE SHELF...

This Construction Machinery Lubrication Book



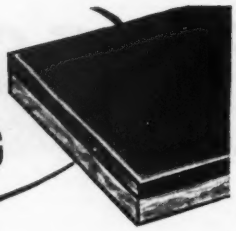
WORKS ON YOUR DESK

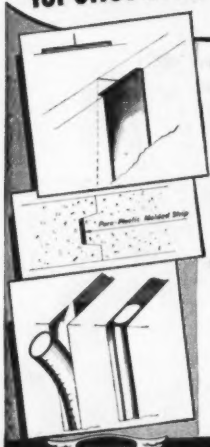
Look up Crawlers, or Calcium Greases, or Diesels or whatnot concerning Earth Moving and Construction Equipment. You'll find your subject covered authoritatively and understandably, from mechanical principles to technicalities. You'll realize that your up-to-the-minute Cities Service book of 56 pages, with sharp drawings and photos, has been developed to broaden your own fundamentals of lubrication *whys, hows and whats.*

You will be able to size up closely the Cities Service lubricants described. You'll notice the self-evident good sense of each specific Cities Service recommendation. And man, it really is specific, because Cities Service makes such a complete line for all types of equipment you may employ. This book's recommendations on Cities Service lubricants—as field records show—will produce savings of oil, grease, downtime and parts to make your judgment look mighty good. Now ... write for your 1952 edition of *Earth Moving and Construction Machinery Lubrication.* CITIES SERVICE OIL COMPANY, Dept. C39, Sixty Wall Tower, New York City 5.

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Premolded Para-Plastic* for effective JOINT SEALING





• PARALATERAL Wide Strip

For sealing vertical construction or expansion joints in Retaining Walls, Abutments, Wing Walls, Foundations, etc., particularly when one side will be backfilled and protection from water seepage is necessary. Has rigid backing of asphalt joint material and surface and both edges coated with Para-Plastic, which maintains bond with concrete at all times.

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Para-Plastic Sealing Compound is molded into strips for sealing of keyed construction joints and cracks or breaks in vertical concrete surfaces. Concrete poured against the strip, after setting up, will bond with strip to form watertight seal.

• NARROW STRIP Pressure Seal

Para-Plastic Pressure Seal is available in both Solid Para-Plastic, and Para-Plastic coated sponge rubber types which are rectangular or square in cross section. Designed for sealing existing expansion joints or contraction cracks in vertical or sloping masonry walls and surfaces.

Servicised Engineers are available for consultation on your joint sealing problems. Write for details and specification data. There is no obligation.

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AVOIDS EXCESSIVE TRENCHING

Hydrauger bored holes for pipe installation invariably reduce costs 80% to 90% by eliminating trenching and back-filling to say nothing of man-hour labor savings and safety to highway traffic.

*Earth Boring Tool

HYDRAUGER CORP. Ltd.
681 Market Street
San Francisco, California

LABOR . . . Continued from p. 98

hand, the erection of an addition to an existing plant engaged in producing goods for interstate commerce definitely comes under the heading of work covered by the Wage-Hour law. The same is applicable to construction of a new bridge to replace an old one; a new interstate highway to replace one that is outdated or inadequate.

While it is often difficult to determine what constitutes new construction, it is clear that the building of churches, schools, hospitals, apartments, houses, etc., is not covered since they play no part in interstate commerce.

Penalties? Yes, and tough. For wilful violation the law stipulates a maximum fine of $10,000 and a jail sentence for second offenders. Further, employers through suits instituted by employees or the Wage-Hour Division on behalf of employees can be forced to pay back wages, liquidated damages and attorney's fees.

Taft-Humphrey Amendment

The recently enacted Taft-Humphrey amendment to Section 8 (a) of the Taft-Hartley Act eliminated the requirements for a union shop election in those cases where the National Labor Relations Board already has certified a union as the bargaining agent, or where the union's representation is clearly established.

This amendment, while helpful, does not completely solve the woes of the construction industry. Contractors and building trades unions traditionally had negotiated wages and working conditions prior to the start of a construction project—a practice outlawed by the Taft-Hartley Act. It was only through negotiation of such agreements that the contractor had assurance of an adequate source of labor and stability of labor costs for the life of the agreement.

Difficulties entailed for both the contractors and unions in adhering to this particular provision of the labor law, while at the same time following the traditional practice of the industry, were highlighted in the Atkinson-Jones case. In that instance, the board required the contractors on a multi-million dollar project at the AEC Hanford Ordnance Works to disavow the collective agreement negotiated with the building trades at the time work was getting under way. Similarly, case after case has been decided by the Board against con-

tractors and unions who had negotiated agreements when no men were employed on the construction work.

An amendment (S1973) to the Taft-Hartley Act designed to eliminate potential violations of the act inherent when contractors and unions bargain prior to employment of men is now before the Senate Labor Committee. This amendment would eliminate for the construction industry the representation election requirements of the act. Combined with the Taft-Humphrey amendment, it would permit contractors and unions to sit down and bargain when the contractor desires to recognize the union, even though no men are employed.

Of course, neither the Taft-Humphrey amendment nor S1973 would change the closed shop prohibition of the act.

Do You Know That:

The Salary Stabilization Board has set up six of 14 field offices—New York, Boston, Detroit, Cleveland, Denver and San Francisco. Other offices will be open shortly at Philadelphia, Richmond, Atlanta, Chicago, Minneapolis, Kansas City, Dallas and Seattle. Contractors can take their salary problems to these offices to assure compliance with regulations.

The Salary Stabilization Board has again postponed the effective date of its revised General Salary Stabilization Regulation No. 1 which was to have taken effect February 1st. This is to be "a code to clarify existing regulations and provide answers to questions raised thus far." A number of conferences with industry representatives indicate the necessity for changes and simplification which are now in the process of being worked out. No effective date has yet been established.

To Keep the Record Straight

LAST MONTH an item on this page commenting on the WSB complaint against J. D. Hedin Construction Co., Washington, D. C., for paying bricklayers $3.00 per hr, 25c over ceiling, on the Ann Arbor, Mich., VA hospital, stated ". . . a rate equal to the one allowed for Detroit, but 25c per hr above the legal rate allowed for Ann Arbor, 30 mi away."

Stephen D. Butts, past president of the Detroit Mason Contractors Association and former industry member of the Wage Adjustment Board, calls our attention to the fact that during the period of Hedin's alleged violation, the bricklayer rate at Detroit was $2.85. The current $3.00 rate at Detroit became effective November 28, 1951.

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U. S. Patent No. 1948410

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"NEWTYPE" SUCTION HOSE, STYLE R-35

SPECIAL REINFORCED ENDS give added strength and resistance to flexing wear back of the couplings, and provide a sturdier, more durable section under the clamps. Ends are colored in bright red for easy identification.

KINKPROOF CONSTRUCTION assures full-capacity bore under suction and discharge, always . . . the hose will not buckle or collapse. If accidentally crushed by heavy equipment, it can be rounded into shape again with mallet or hammer.

EXTREME FLEXIBILITY with comparative lightness in weight, makes "NEWTYPE" easy to handle, even in longest lengths.

INSEPARABLE BONDING of tube, carcass and cover, by patented process, insures extra long service life under severest working conditions.

A GOODALL *"Standard of Quality"* PRODUCT FOR CONTRACTORS. Made in sizes 1" to 1½" I.D., maximum lengths of 100 feet; 2" to 4" I.D., maximum lengths of 50 feet. *Contact our nearest branch for details and prices.*

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Without disturbing the surface! A standard model McCarthy Public Utility Drill recently bored a 12" diameter hole to a horizontal depth of 180 feet, under railroad tracks, to lay a gas main at Alliance, Ohio. McCarthy Utility Drills bore holes from 4½" to 24" diameter under roads, buildings, railway tracks, landscaped grounds, etc., for laying gas, water, power lines and for drainage purposes.

SELF-PROPELLED HORIZONTAL AUGER DRILL

Produces 40% more 6- to 8-inch blast holes per day. Works up to 120-foot horizontal depths, using 8-foot interlocking auger extensions. Bill Mathews, of Canton, Ohio, drilled 1800' of 6" diameter holes in one day. Finger-tip hydraulic carriage control permits selection of any drilling speed up to 6 feet per minute. Four individual self-locking jacks maintain correct drilling level. Over-all length: 12 feet; width: 5 feet 8 inches.

VERTICAL AUGER DRILL

A real time-saver for 6 and 8-inch blast hole and exploratory drilling. Compactly designed for mobile mounting with 8-foot hydraulically controlled tower. Special square alloy shaft and chain coupling power combination results in smooth, coupling power ing action. When in traveling position, the over-all height is only 7½ feet. Total weight: 4800 lbs.

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SALEM

The Maintenance Shop

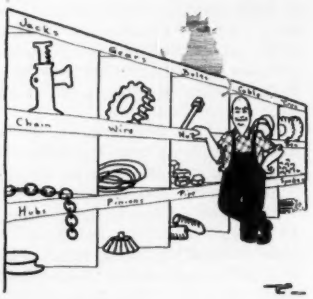
A MONTHLY EQUIPMENT AND REPAIR FEATURE

Organize for Preventive Maintenance

By HAROLD F. HESS*
Executive Vice-President,
Construction Industry Manufacturers Assn.

MANUFACTURERS OF construction equipment build thousands of useful and profitable hours of service into each piece they sell and, for the most part, it is built much better than the average automobile —which normally gives its owner long and hard service.

And they have learned that the results an owner gets from his equipment always will depend upon intelligent and careful opera-



tion and an adequate and well-supervised preventive maintenance program. This fact is of genuine importance during the course of peacetime construction activities. In time of mobilization for defense, construction machinery immediately assumes the importance of planes, guns and tanks. It makes possible the rapid expansion of industrial plants that produce war materiel and is the means for fast construction of vital air bases, ports and harbors, camps and other military establishments.

To be adequate, a preventive

(Continued on page 104)

*Abstracted from a paper presented recently by Mr. Hess at the Fourth Annual California Street and Highway Conference, Los Angeles.

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"Built to last" EQUIPMENT

Sturdy construction and finest craftsmanship make KYSOR Equipment easy on maintenance and simple to service.

Complete service instructions are available in KYSOR Service Bulletins such as those illustrated. Authorized KYSOR Distributors are also equipped to service all types of KYSOR SHUTTERS and Controls.

Please enclose shutter serial number when requesting service material or replacement parts.

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KYSOR maintains a rapid-service parts exchange department for customer convenience and savings. Exchange Plan includes Shutter-stats, Alarmstats, Pressurestats, Air Filters, Air Cylinders, Vacuum and Hydraulic Controls.

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Air Control Shutters ☐ Vacuum Control Shutters ☐

Hydraulic Control Shutters ☐ Parts Exchange Plan ☐

For Shutter Parts List add Serial No. _____



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• EVEN BEFORE the plans are drawn . . . *before* the blueprints are made on your next engineered construction job, call in Blaw-Knox engineers for the expert consultation service that assures lower concrete placing costs.

Blaw-Knox engineers are backed by over 40 years experience in solving tough or unusual concreting problems. They are trained to get to the core of your problem and find the simplest, least costly method of solving it. They can suggest operating procedures to speed the job, or cut down the necessary number of operations. They will recommend the most efficient forms for the job and help you estimate your bids.

Whatever your concreting problems—dams, tunnels, bridges, even small sewers—take advantage of the Blaw-Knox engineering service *before* you start to plan. Write, wire or phone for information.



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• This big tunnel job is a typical example of how early consultation pays off. Blaw-Knox engineers showed the contractor how to combine the collapsible Steel Forms to permit concreting of side walls and roof arch in one operation. One step in construction was saved, and the necessity of using an expensive copper water stop was eliminated.

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MAINTENANCE SHOP... Continued

maintenance program must have proper supervision and receive full backing by management. But then it will keep construction machines and allied equipment in continuous operation; it will eliminate breakdowns, down-time, man-hour losses and delays in production.

The industry's maintenance and service specialists generally are agreed that the best procedure to follow in setting up an adequate preventive maintenance program should be something like this:

A. Determine exactly what the program should cover, for example:

1. Purchasing the right equipment for the job.
2. Proper unloading of new equipment.
3. Proper assembly of new equipment.
4. Complete and careful servicing prior to placing in operation.
5. Proper loading, blocking and unloading equipment during movement from one job to another.
6. Proper storage, especially in bad weather.
7. Proper handling on the job, by competent operators.
8. Developing a specific maintenance program for each type of equipment with proper check lists and reporting forms.
9. Prompt repair of defective parts before major damage takes place.
10. A definite overhaul program after a certain number of hours of service.

B. Organize for preventive maintenance, following a plan something like this:

1. Make one person responsible for establishing a preventive maintenance program and executing it.
2. Give this man the authority to select adequate and capable manpower and to pay them what they are worth.
3. Make check charts of all periodic inspection points.
4. Make up a schedule of periods for checking adjustments, necessary replacements and correct lubrication.
5. Stock an adequate supply of spare parts, properly identifying them and provide adequate housing for them.
6. Procure necessary tools.

7. File manufacturers' operating, maintenance and parts manuals in a quickly accessible location. . . . . .

8. Make the recommendations of the manufacturers a part of your preventive maintenance program.

9. Stock adequate supplies of proper grades of lubricant in clean surroundings. Label each type of lubricant for the various points used.

10. When operating away from home-maintenance facilities, establish contact with qualified manufacturers' representatives to get technical and repair service and spare parts.

The establishment of any preventive maintenance program will depend for its success not only on having a good program, but also to a large extent on how well the program has been sold from top management down to the operators and mechanics.

A great deal of help and assistance is available to the user of construction machinery and allied equipment in this regard. Each machine is accompanied by a set of manuals covering loading, unloading, assembly, operation, repair, care and maintenance.



In addition, the user has the opportunity, from time to time, of taking advantage of service and operators' schools put on by the manufacturers and their distributors.

I should like to point out that the manufacturers' manuals or instruction booklets are not always placed in the hands of the right individuals, many wind up in the

(Continued on page 108)

NOW...a PENGO Auger size to meet your needs exactly...



A scientifically-designed double-helix auger that:

★ Bores in any kind of soil, hardpan or decomposed rock, frozen ground, permafrost!

★ Bores clean, straight holes of the specified diameters – saves concrete

★ Saves power, minimizes wear and tear on your earth-boring machine

★ Eliminates repair trips to shop...hard-facing expense.

★ Made in 15 sizes for 10" through 54" hole diameters for use with all popular makes of earth boring machines. Larger sizes on order.

"THE MOST PROFITABLE TOOL YOU EVER BOUGHT." Order PENGOS for your present machines... specify PENGO augers with your new machine. Order today or send for literature, prices.

All PENGO Augers use the PENGO Wisdom Tooth..."Get the PENGO Wisdom Tooth... It knows how to bore holes."

PETERSEN ENGINEERING CO.
MANUFACTURERS
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POWER TO FIT THE JOB

WISCONSIN-Powered COMPRESSOR-SPRAYER

Fast towing to location and then quickly spraying large areas on the job sums up the story of this mobile compressor-sprayer, built by the DeVILBISS Co., Toledo, Ohio, powered by a Wisconsin Heavy-Duty Air-Cooled Engine.

Builders of fine machines and the buyers who use them endorse Wisconsin Engine Power . . . so much so that Wisconsin Engines are *first choice* in almost every field, 3 to 30 hp. For example, tapered roller bearings at both ends of every Wisconsin Engine crankshaft absorb all thrusts, reduce, too, the chance of bearing failure. And you'll also endorse fool-proof air-cooling in all weather, summer and winter, along with the easily-serviced OUTSIDE magneto with impulse coupling, delivering fast starts *always*.

Write for "Power Magic" telling about all 4-cycle single-cylinder, 2-cylinder and V-type 4-cylinder models, 3 to 30 hp.



WISCONSIN MOTOR CORPORATION
World's Largest Builders of Heavy-Duty Air-Cooled Engines
MILWAUKEE 46, WISCONSIN



"This is where we came in . . ."

The picture that's coming up on the "news reels" now is one that we all remember. Once again Uncle Sam is a big machinery customer with first call on output.

This doesn't mean that we can't take care of our old customers . . . but it may mean that we can't do it as promptly as you've learned to expect. You may have to wait a bit longer for that new shovel, dragline or crane. But it's in a worthy cause . . . and to compensate, may we suggest that you take a little extra care to make your present equipment last?

We're not suggesting that you *pamper* the machines. Lima equipment is designed and built to take a terrific beating, and you can keep right on demanding a full day's work from every unit. But almost every piece in service gets some *unnecessary* punishment, because proper maintenance is neglected. If you focus on proper care—which every good piece of machinery deserves—you'll keep the Lima's at their working peak considerably longer.

For further information
write to
BALDWIN-LIMA-HAMILTON CORPORATION
Lima-Hamilton Division
Lima, Ohio, U. S. A.

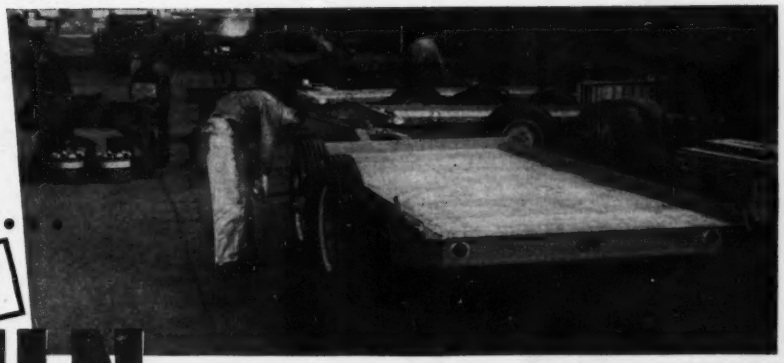
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here they are.



NEW

JAHN TILT TRAILERS

ready for spring shipment!

To better serve our customers we have increased facilities to meet the constant demand for Jahn Trailers. Additional production equipment and the latest techniques enable us to supply the engineering and construction industry with rugged, dependable, modern trailers for delivery this Spring. Fill in the coupon for literature on the popular models now in production.

THERE'S A JAHN TRAILER FOR EVERY HAULING NEED



Jahn Trailer Division
Pressed Steel Car Company
6 N. Michigan Ave. Chicago 2, Ill.
Dept. CM&E

Dear Sir:
Send me literature on Jahn Trailers of the load limit checked, with no obligation to me.

☐ 8 ton tilt ☐ 20 ton semi ☐ 25 ton semi ☐ 30 ton semi

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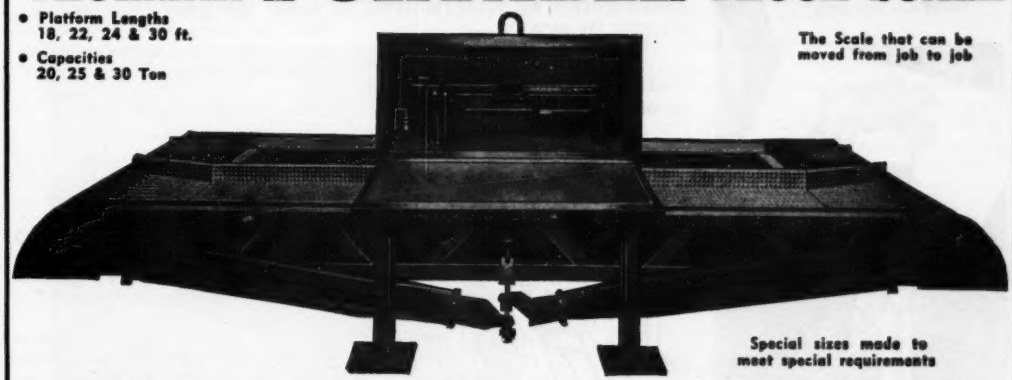
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THURMAN PORTABLE TRUCK SCALE

- Platform Lengths 18, 22, 24 & 30 ft.
- Capacities 20, 25 & 30 Ton

The Scale that can be moved from job to job



Special sizes made to meet special requirements

Wide Steel Bases — support scale — require no concrete footings. Easy-to-read chrome plated weighbeam with vital parts electroplated against corrosion.

Accurate and Portable — This scale can be transported from job to job by removing 6 nuts which hold side arms in place. The rest of the scale can be lifted as a unit. Once located, it can be readied for use in minutes.

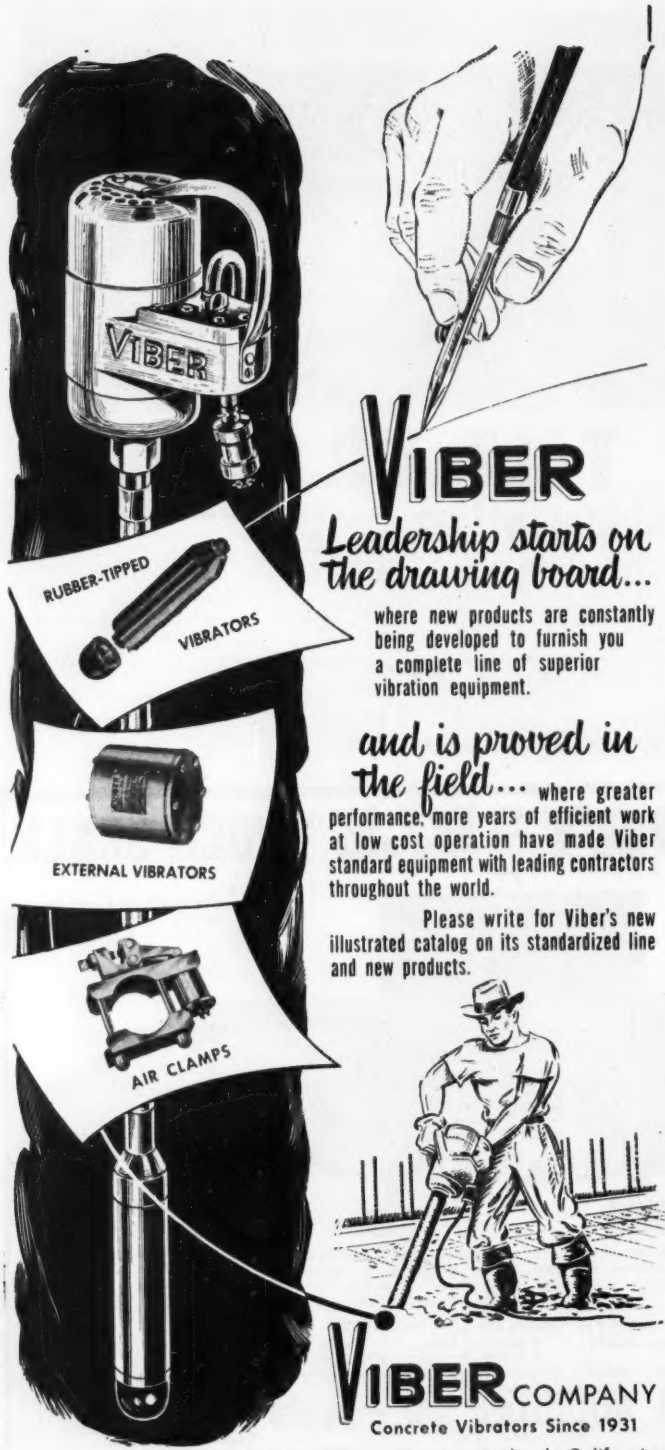
THE COMPLETE THURMAN LINE INCLUDES:

- Pit Scales up to 50-ton capacity
- Pitless Scales
- Batching Scales
- Liquid Weighing Scales
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This and other weighing equipment in sizes to fit your requirements.

THE THURMAN MACHINE CO.—Scale Division

155 North Fifth Street — Established 1918 — Columbus 15, Ohio



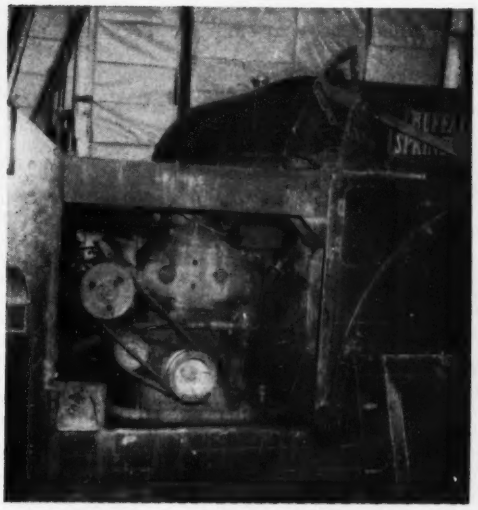
purchasing department's files. Many times the superintendent or shop foreman has them well hidden. To a major degree mechanics, operators and greasers never see the instruction books. The mechanic or the operator consequently has to feel his way along. Preventive maintenance "thinking" and "action" really begins with the executive responsible for its execution.

I have a stack of these instruction books and manuals in my office. And I know that they are available to you and how helpful they can be. For example, I have a copy of a preventive maintenance guide on a 1½-yd gasoline-powered excavator which starts off with the statement, "Preventive maintenance is the systematic application of common sense measures in taking care of what you have." This guide outlines the purpose of preventive maintenance and suggests that inspection follow a schedule somewhat like this:

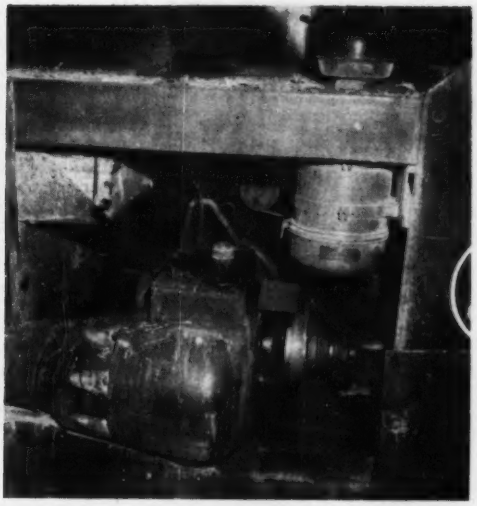
"Since the installation of our preventive maintenance program, I can tell you that instead of overhauling our equipment every four or five thousand hours, we are now overhauling it on an average of every eight to ten thousand hours at half the cost—giving us not only a saving in over-all costs, but also twice the equipment service between overhauls." — Jim Symonds, Equipment Superintendent, Peter Kiewit Sons' Co.

- Daily before-operation services
- Daily during-operation services
- Stop-period in middle of shift services
- A list of ten "don'ts"
- Daily after-operation checks
- 64-hr or weekly maintenance including all 8-hr services
- 256-hr maintenance including all 8- and 64-hr maintenance services

May I suggest that the maintenance manual which you develop in your own area of operation, depending, of course, upon the number of units you operate, should be somewhat like the manual of maintenance of plant and equipment used by Peter Kiewit Sons' Co. It has 18 pp that outline the fundamentals of preventive maintenance and the general program. Then follows a breakdown of visual checks by supervisors on each type of equipment and its components.



SLIGHT ADJUSTMENT of the engine base was all that was needed to accept this GM diesel, with plenty of room for repair work. One belt runs generator, the other a hydraulic pump for steering.



TORQUE CONVERTERS are direct-connected to the diesels and, with throwing of a simple lever, transmit power alternately to reversing clutches, then through pinion gear and finally into drive roll.

Diesel Power and Torque Converters

...A Contractor's Idea for Big Rollers

By J. M. CONNOLLY, Equipment Editor



ART DEBAUN, master mechanic for Geo. M. Brewster & Son, Inc., points to dual tail-drive governor which controls diesel and output end of the converter, maintaining constant ratio between them.

NO GEAR SHIFTING, no jerky stops and starts, no pressure ridges and waves in the blacktop finish—just sm-o-o-th, easy performance backed up by the lugging power of a diesel engine. That's the story of the first fleet of big Buffalo-Springfield rollers equipped with GM diesel engines and Twin Disc torque converters at the insistence of Geo. M. Brewster & Son Co., Bogota, N. J.

It all started on the New Jersey Turnpike long before the mammoth paving program got under way. The Brewster outfit figured that they would need seven new rollers, but wanted them equipped with diesel engines; first, for the extra power obtainable, and secondly, so that they would fit in with the company's constantly increasing standardization of diesel engines, parts and accessories.

In addition to this they had been experimenting for months on earthmoving operations and had equipped several Euclid bottom-dump rigs with various combinations of diesel engines, torque converters, transmissions and manual clutching devices. They then studied fuel consumption, wear and tear, flexibility, ease of handling on the various tractor units and came up with this decision: They also wanted torque converters on these new rollers.

At first Buffalo-Springfield Roller Co. couldn't agree that this could be done, but Brewster's men said otherwise. They sent their master mechanic out

HOW TO HANDLE WET JOBS

#3 of a series

SEA WATER INTAKE LINE

Jacksonville Beach, Fla.

Contractor:

B. B. McCormick & Sons



265 FT LAID IN TWO 6-HR PERIODS BETWEEN TIDES

THIS ENTIRE AREA was under water at high tide—yet wellpoints solved the problem. Using a Griffin Wellpoint system (see photo), contractor dewatered and dug the 265 ft trench, and laid twin transite lines . . . completing all these operations within two 6-hour periods between tides.

• Have *you* a "water worry" coming up? No matter what type job . . . sewer . . . power house . . . dam . . . remember this: The faster you lower water, the more you lower costs. For "quick dry" . . . specify . . . Griffin—wellpoint pioneer and problem-solver through nearly two decades.

GRIFFIN

WELLPOINT CORP.

881 East 141st Street, New York 54, N. Y.
Hammond, Ind. Jacksonville, Fla.

In Canada: Construction Equipment Co., Ltd.
Toronto Montreal Halifax

to Springfield, Ohio, plotted and planned with their engineers on space and accessibility; then stayed there while the pilot model was set up and tested strenuously for grade-pulling, flexibility and general behavior. Then, with all hands satisfied, he returned home. Buffalo-Springfield made up the other six and shipped them out.

They arrived in May, 1951, and immediately went to work rolling subgrade, stone and actual paving on double shifts. They rolled their way over 54 miles of 24-ft turnpike without any trouble either in the General Motors diesels or the Twin Disc torque converters —a tribute to the foresightedness and joint efforts of an energetic contractor, his enthusiastic mechanics and a cooperative equipment manufacturer.

The rollers themselves are 3-axle tandems, KX-25T's, with adjustable weight from 12¾ to 19¼ tons. Only minor relocation of the standard engine base was necessary to accept the 3-cylinder, 80-hp GM diesel (Model 3055-C) which sits on rubber biscuit-shaped mountings. The engine is direct-connected to a Twin Disc torque converter, Model F100-30-TC-15. There are no clutches, no sliding gears, no pedal controls; just direct-connected reversing clutches. A Woodward dual tail-drive governor is connected to the output end of the torque converter, set for 1,750 rpm; and also connected to the diesel set for 1,800 rpm.

Extra Power Available

This means that the engine may be revved up to its full 1,800, but the output end of the torque converter will transmit only a maximum of 1,750 to either of the reversing clutches, which, in turn, transmit the power to the driving roll. In this way a little reserve power is always available for steep grades, obstacles and the like. There is a speed selector which controls machine travel; low range is 1.5 mph and high range, 5.6 mph. The twin tail governor automatically takes care of low and high speed changes merely by the push or pull of the speed lever. Forward and reverse travel, too, is governed by another simple two-position lever. There is no disengagement clutch on the torque converter since it does not turn when the motor is idling.

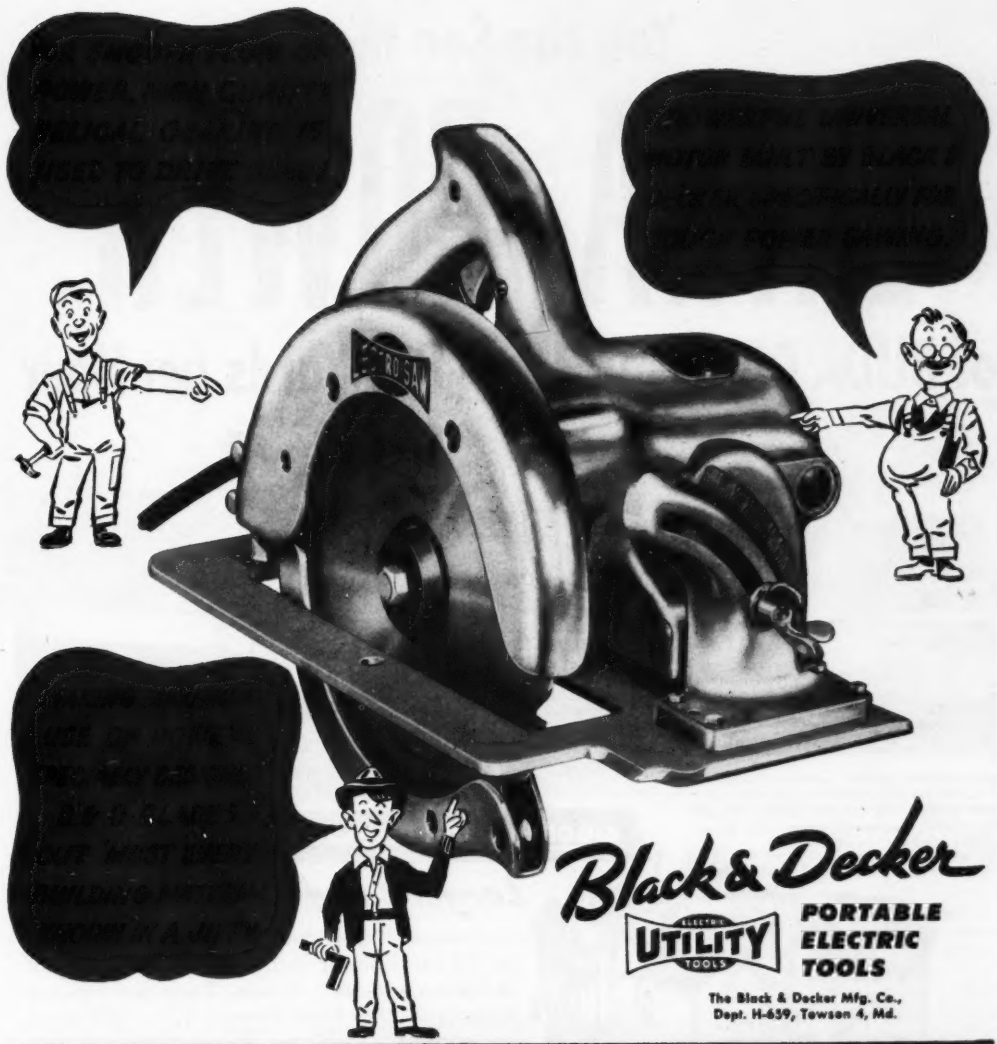
Actions and Reactions

Here's a quick comparison of actions and reactions between the regular gasoline engine-clutch-shifting operation and the newer, efficient two-lever, clutch-free torque converter method: Ordinarily you would race your engine, select a low forward gear, engage the clutch slowly and start off. To reverse, you would have to disengage the clutch, shift into reverse, engage it again with the accompanying gear clanking, and start off in the opposite direction. Meanwhile the roller is sitting perfectly still, even though it may be only for an instant—and this sitting, plus the pounding effect of starting up again, is sure to make a small indentation in the finish surface under each of the three rolls. What's worse, each additional pass over these dents will enlarge them slightly. The same motions are needed for low- and high-speed selection. With the new setup you rev up the diesel, throw the speed selector lever into low, push the travel lever to forward position, and the roller moves with an amazingly smooth start and acceleration. To reverse, you merely pull the travel lever quickly into its opposite position; then the roller rapidly slows down and immediately starts off in the opposite direction. If you were to come off a fresh patch on to a hard, previous pour and want extra speed, merely throw the speed selector from low to high (again without any clutching) and the double governor and torque converter join forces to accelerate rapidly and smoothly.

Right now; the rollers have been put away for the winter with radiators drained and batteries removed. But they'll be out again soon repeating the bang-up job they did on the New Jersey Turnpike.

Good News Travels Fast

• One of the Brewster Co.'s neighboring contractors on the N. J. Turnpike (Andrew Gull Co. and Tully & DiNapoli), saw how well the rollers were doing and ordered diesel engines and torque converters put into their three new Buffalo-Springfield VT-48's big 25-ton rigs that they used on the turnpike job.


Black & Decker
ELECTRIC
UTILITY
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PORTABLE
ELECTRIC
TOOLS
The Black & Decker Mfg. Co.,
Dept. H-639, Towson 4, Md.

You can See the

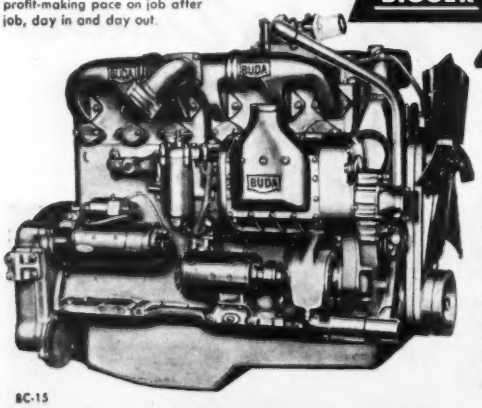
EXTRA POWER

of BUDA Diesels in More Pay Yards per Hour



Spencer Construction Co., Carrollton, Texas, using 3 TS-300 LaPlant-Choate Motor Scrapers powered by Buda Supercharged 844 Diesel engines for steady, slugging performance that sets a profit-making pace on job after job, day in and day out.

BIGGER PISTON DISPLACEMENT PAYS OFF IN...



BC-15

Larger Loads...Faster Trips!

Operators all over the country are capitalizing on the extra power and greater lugging ability of Buda dyna-swirl Diesels. They can *see* the advantages that Buda Diesels' 12 to 18% more horsepower . . . 10 to 17% more torque give them in more pay yards every trip . . . every hour . . . every day.

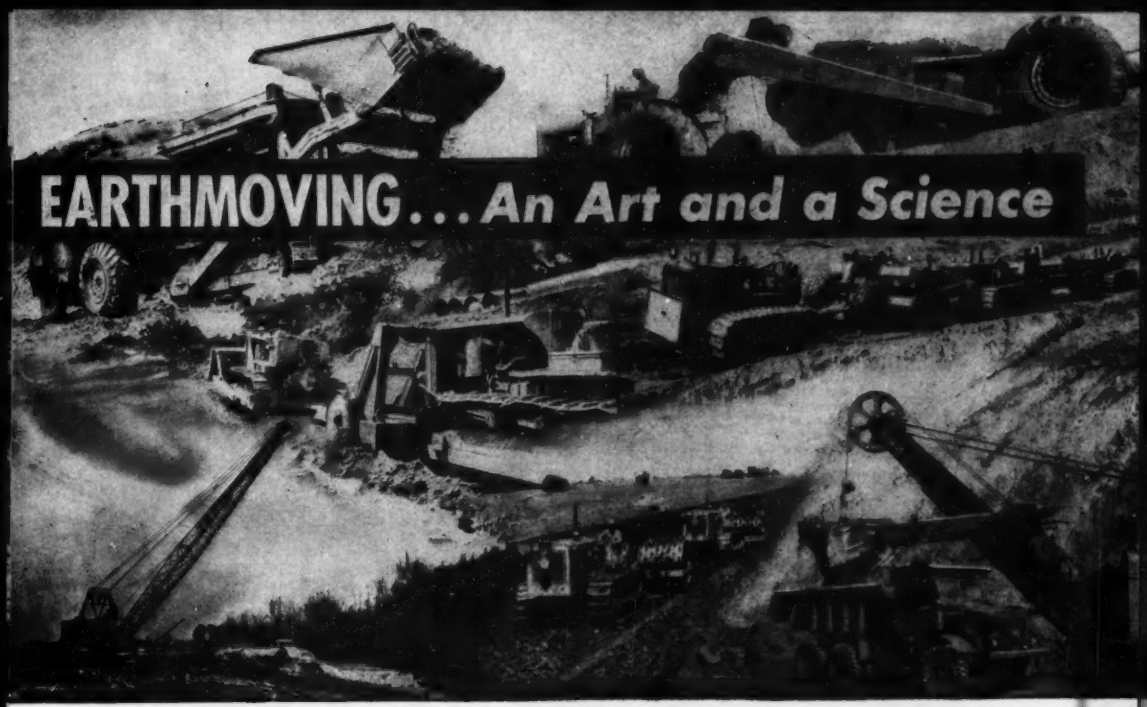
These BIG Buda Diesels are your kind of engine—simple in design . . . easy on fuel and lube oil . . . require minimum maintenance and deliver 8000 or more hours of high performance operation between overhauls.

Your nearby Buda Distributor can prove Buda dyna-swirl Diesel advantages to you. Ask him today. Write for Bulletins and specifications today. The Buda Company, Harvey, Illinois

BUDA

a Power-Full and Dependable Name in Engines...

Manufacturers of Diesel and Gasoline Engines, Maintenance of Way Products, Lifting Jacks, Earth Drills and Material Handling Equipment



15. How to Operate Shovels and Hoes

By E. O. MARTINSON, Vice-President, Engineering, Koehring Co.

IN THE ⅜- to 2½-cu yd size range, power shovels are portable enough to be moved easily from job to job, and a typical machine and its operator will encounter a variety of jobs requiring different approaches. Also, attachments frequently may be changed because machines in this size range are designed for easy convertibility to hoes, draglines, clamshells, lift cranes, pile drivers, magnet-handling cranes and the like.

Power shovel and hoe attachments are interchanged most easily because they operate with the same basic counterweight and crawler tread sizes; draglines, clamshells and lift cranes generally are operated with heavier counterweights and longer crawlers to provide the greater stability necessary. Longer crawlers are not required in shovel or hoe operation but they are not too much of a disadvantage, except for some possibility of interference with dipper action, harder steering and maneuvering and greater cost.

But shovels and hoes should not be operated with the heavier crane counterweights because this excess weight puts more strain on the machine. Shovel and hoe work is harder on the machine anyway, and a reduced counterweight helps to limit the overloads which an operator can put on the hoist cables and boom. The reduced counterweight lowers fatigue loads on the crawler frames and axles.

Fig. 1 shows the various shovel working approaches.

• Machine adjustment for shovels

For best performance and the least amount of maintenance, good operators will keep their machines carefully adjusted and will see that the manufacturer's lubricating instructions are followed.

The hoist clutch, whether manual, mechanical booster, air or hydraulically actuated, should be adjusted so that it will slip before stalling the engine quickly. When the shovel dipper is hooked under a ledge, the clutch should start slipping and allow the engine to run 5 sec or so before it is pulled down to a stall. After the load release setting has been set correctly, the clutch band is adjusted occasionally for wear. Adjustments may be needed on some clutches to compensate for heat expansion of the drum during a day's run.

Nearly all band-type clutches are provided with carriers which prevent the bands from dragging when released. These carriers should be kept close to the band so that when the clutch is released, the band will hug all of the carriers. The manufacturer's instructions specify the correct clearances. If the carriers are too loose, the bands or shoes will shift due to gravity as the clutch rotates and may cause unnecessary wear and heating. *Fig. 2* shows a typical band clutch.

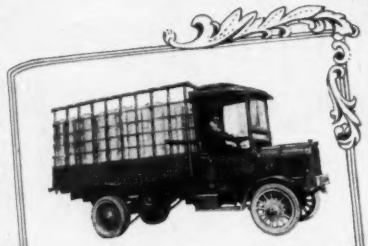
Hoist cable life will be increased greatly if overload can be prevented by proper clutch adjustment, because the engine has enough power to overstrain a hoist cable when its full power, plus its

(Continued on page 116)

This article, the 15th consecutive one in a series on the fundamental principles of earthmoving, is sponsored by the Power Crane and Shovel Association.

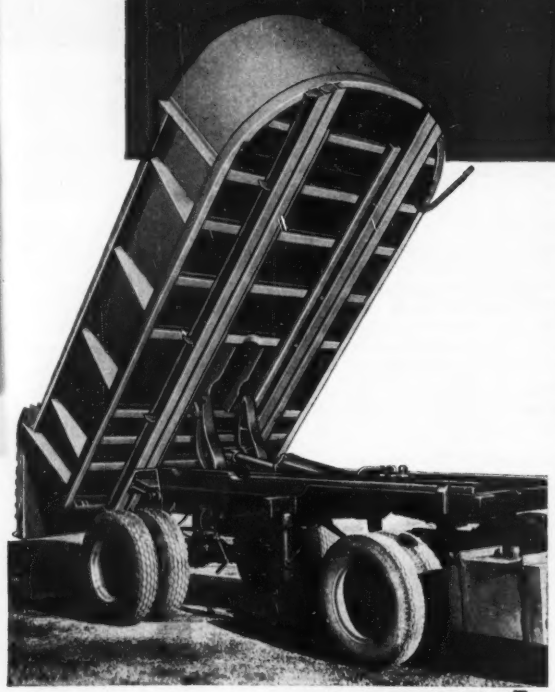
PIONEERS
of the Motor Truck Industry

This 1911 model truck was built by one of the pioneer truck manufacturers who was responsible for the development of many important advancements in motor truck design. If you are not sure of the name of this old truck - - write to us.



Can you name it?

PERFECTION
Has Led in Body and Hoist Design
by keeping pace with all modern truck engineering



No sooner did the early possibilities of the motor truck become established than the need arose for a variety of special purpose bodies and hoists for various payload body capacities. PERFECTION, another pioneer, did something about that need by combining soundly engineered practical designs with quality construction.

Photo at left shows a PERFECTION Iso-Draulic Roll-A-Lift mounted with a PERFECTION style 354 Dump Body. This patented hoist was pioneered by PERFECTION to lift the tremendous loads of modern haulage requirements. Pressure in the cylinders remains constant from riding position of body to full dumping angle.

Write Dept. M-32 — for literature

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STANDARD or SPECIAL UNITS IN ALL SIZES • FOR ANY USE

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GREATEST CONTRACTORS' PUMPS EVER BUILT



"Marlows pump water without recirculating it — there's no wasted power or fuel. Greater efficiency. Longer engine life."



"Marlow's advanced design prevents clogging and other pumping troubles."

No other pumps are like the great new Marlows . . . because no other pumps are built like Marlows.

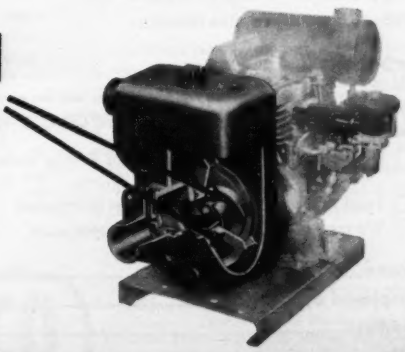
Far-advanced engineering makes Marlows by far the strongest, simplest and most efficient self-priming centrifugal pumps in the world. The new Marlows will prime faster and higher — move more water at lower cost — handle dirtier water — require less maintenance — and will last longer than any others.

Made in all AGC ratings: 4M through 240M, 1½"-10" — plus many other models for special use.

Catalog Sent Promptly

"SEVERAL PUMPS FOR THE PRICE OF 1"

A Marlow is the *only* self-priming centrifugal pump made with a replaceable impeller and diffuser. After long hard use, new ones can be easily and inexpensively inserted to restore the pump *to full original efficiency!* A patented Marlow feature.





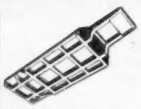
MARLOW PUMPS



To save costly delays and special handling charges, this ingenious contractor simply drove his La Crosse flat bed *right into the manufacturers' plant* under this huge 12½ ton ready-mix storage silo — lashed it securely into position — and drove it away in a few minutes. You, too, can save time, trouble and money by *doing your own equipment hauling* on job-proved La Crosse trailers. Choice of flat, drop, or tilting platforms—6 to 67 tons capacity. Write for free descriptive literature.

LC-22

Up to 2000 lbs. less dead weight per trailer.



Stronger goose-neck construction.



Safer, more dependable brakes.



Stronger specially-built axles.



Check Today!

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LACROSSE
America's Favorite LOW BED TRAILER

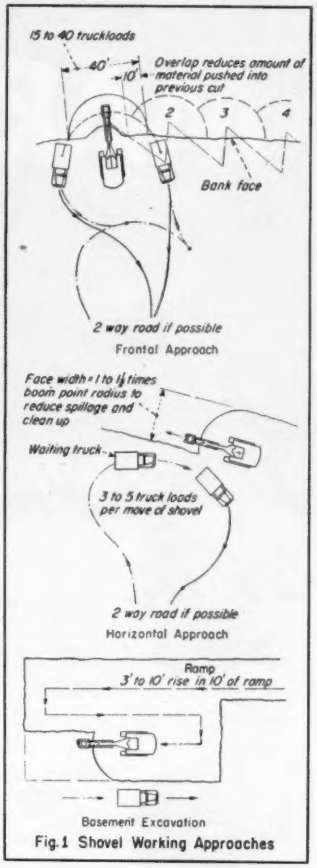


Fig. 1 Shovel Working Approaches

flywheel effect, is applied to the hoist action alone—unless the hoist clutch can be made to slip to limit this power.

It is impractical to use an oversize cable on a given machine because that increases sheave and drum sizes, which in turn require larger shafts and clutches to carry the increased torque. If the digging is so hard that it is necessary to continually stall down the engine, the material should be blasted better, or a larger and more powerful machine should be used.

The crowd clutch on most shovels is the same size as the hoist clutch, even though it needs to transmit much less power. This full-size clutch is necessary for other attachments. Its load release device can be set much lighter than on the hoist clutch. Clutches are easier to engage when set for light pressure. Although the crowd clutch may have a light pressure

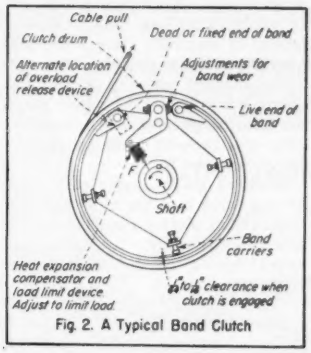


Fig. 2. A Typical Band Clutch

setting, it runs hotter than the hoist clutch and dissipates more heat.

Even experienced operators may not realize how much power they are wasting when crowding the dipper into the bank. This waste of power results in lower average speed and unnecessary lugging of the engine which causes more blow-by in the engine cylinders, lube oil deterioration and excessive wear.

The crowd clutch in normal shovel operation is engaged just enough to hold the dipper barely against the bank while the hoist clutch is fully engaged from the start. But power clutches may be so easy to engage that the operator may not realize how much force he is using. A light setting on the crowd clutch may prevent damage to shafts, chains, cables and dipper sticks if the stick is accidentally run out to its limiting stops.



The retract clutch returns or reverses the dipper stick. It is a smaller clutch which does double duty as a boom hoist on most designs of shovels. Needless to say, it also should be set only tight enough to hoist the boom or lift the dipper and stick.

The shovel hoist brake setting is not too critical. It should be set tight enough to hold the load. If set any tighter than necessary, the foot pedal does not have to be depressed as far. But in many brake designs the leverage increases as the foot pedal approaches the floor, which means that less foot pressure is required if the brake adjustment can be eased off to the point where it will just hold the load with the pedal almost all the way down.

The shovel crowd brake setting is more important. Here it is definitely desirable to have the lightest possible brake-drum pressure, especially when digging against high bank faces. This brake should be set so that when the pedal is all the way down it will barely keep the loaded dipper from rolling back.

Fig. 3 shows how a tremendous thrust can be created on teeth, dipper, sticks, boom, crowd chain, shafts and bearings unless the stick can roll back against the brake or clutch. Many a crowd chain or cable has been overstrained unknowingly. Digging a high bank is inefficient and slower, but once in a while it is necessary to work the shovel this way and the machine should be protected by the loose brake setting.

Swing clutches are easiest to op-

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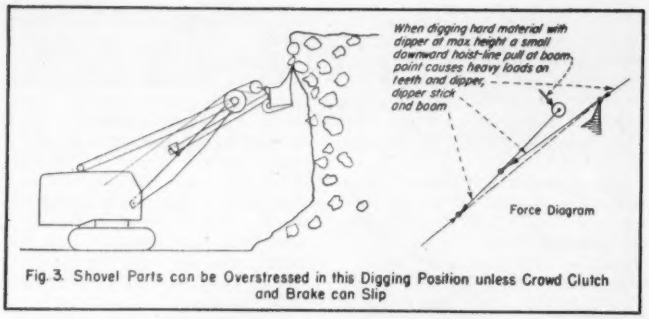


Fig. 3. Shovel Parts can be Overstressed in this Digging Position unless Crowd Clutch and Brake can Slip

erate if kept loose. Since the swing clutches also propel the machine, they will have to be tight enough to move the machine up normal grades. Because of their higher operating temperature, they may require more frequent adjustment than other clutches.

The engine clutch must always be tightly adjusted. It serves only as a disconnect clutch and is never intended to slip under load. It won't last long if it does.

The dipper digging angle usually is adjustable to two or three positions. With sticky material, it may be desirable to tilt the dipper back so that the material will slide out better. Where most of the digging is low and near the crawler level, the dipper will fill easier and clean up the ground level better if the dipper is pitched forward more.

The dipper latch mechanism is adjustable for wear. The minimum latching distance should be used so that the latch bar won't have to slide any more than necessary and yet keep the door from opening accidentally. This setting will keep latch wear to a minimum.

Boom angle on machines in this size range is adjustable and usually operated at from 35- to 65-deg angles of elevation. The lower angles are used for grading, clean-up work, shallow cuts and digging below grade. Although a low boom may permit greater reach, the digging will become inefficient at the longer reach.

Medium boom angles of around 45 deg work best for most digging. High boom angles may be needed when dumping into trucks on elevated banks or for digging in cramped quarters.

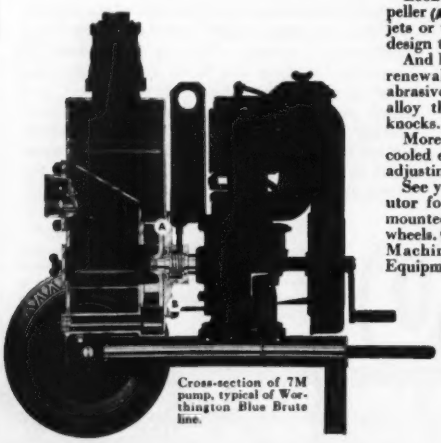
• Shovel size and hourly capacities

Factors governing the size selection of shovels were given in the November and December issues of CONSTRUCTION METHODS AND EQUIPMENT. Price, weight, digging ranges, hourly capacity chart and a delay factor chart for shovels were shown. *Table A* shows approximate shovel hourly yardages for several classes of material. This output is modified by the angle of swing and digging depth. Delays due to weather, waiting for trucks, maintenance and repairs can reduce

(Continued on page 120)

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Faster! Easier! At Lower Cost!



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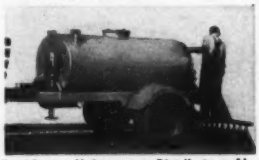
3 sweeper models, axle, engine or tractor powered.



Chip spreaders 8' to 12' width. Also asphaltic concrete spreaders.



Rapid Fire circulating heaters heat and unload large tanks of asphalt.



Rapidspray Maintenance Distributors. Also heaters for production melting of barreled asphalt.



Sheepsfoot Rollers
250 to 600 psi.



Pneumatic rollers
7 to 50 tons.

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6100 S. Lamar Dallas, Texas

TABLE A—Hourly Shovel Capacity—Cubic Yards, Bank Measure, 90-Deg. Swing, Best Digging Depth, Materials Loaded into Hauling Units.

CLASS OF MATERIAL	Shovel Dipper Sizes in Cubic Yards								
	⅜	½	¾	1	1¼	1½	1¾	2	2½
Moist loam or sandy clay	85	115	165	205	250	285	320	355	405
Sand and gravel	80	110	155	200	230	270	300	330	390
Good common earth	70	95	135	175	210	240	270	300	350
Clay, hard, tough	50	75	110	145	180	210	235	265	310
Rock, well blasted	40	60	95	125	155	180	205	230	275
Common, with rocks and roots	30	50	80	105	130	155	180	200	245
Clay, wet and sticky	25	40	70	95	120	145	165	185	230
Rock, poorly blasted	15	25	50	75	95	115	140	160	195

TABLE B—Depth of Cut in Feet to Fill Dipper

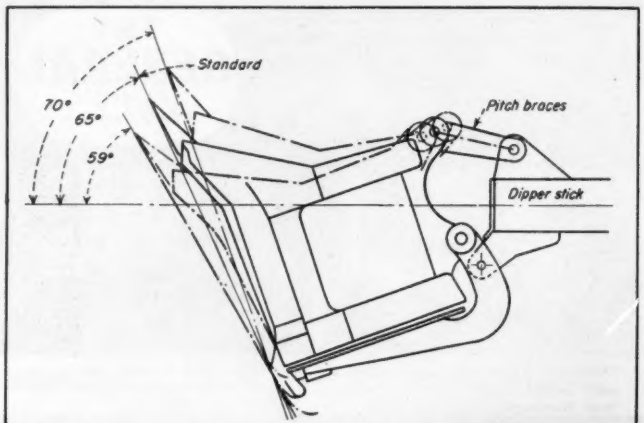
CLASS OF MATERIAL	Shovel Dipper Sizes in Yards								
	⅜	½	¾	1	1¼	1½	1¾	2	2½
	Feet								
Moist loam or sandy clay	3.8	4.6	5.3	6.0	6.5	7.0	7.4	7.8	8.4
Sand and gravel	3.8	4.6	5.3	6.0	6.5	7.0	7.4	7.8	8.4
Good common earth	4.5	5.7	6.8	7.8	8.5	9.2	9.7	10.2	11.2
Clay, hard, tough	6.0	7.0	8.0	9.0	9.8	10.7	11.5	12.2	13.3
Clay, wet and sticky	6.0	7.0	8.0	9.0	9.8	10.7	11.5	12.2	13.3

these outputs considerably. There is a wide difference in output, depending upon the class of material being dug.

How to Use the Shovel Correctly

• **Drainage**—Whenever possible, the excavating operation should be planned so that water can drain out of the area. This will keep the shovel and trucks on better footing. If necessary to work in undrained pits for a day or more, pumps may be required to remove the ground water or water from rains. If a pit or low area cannot be drained by gravity flow, the shovel should not be left in the area when unattended because of the danger of flooding it.

• **Digging approaches**—Two principal methods are used in digging into a side hill or bank. In the frontal approach, the shovel travels directly toward the bank until its center is about even with the original face. The shovel then backs out



Dipper Pitch Adjustment

and takes a new path alongside the first one. The frontal approach permits loading trucks from either side of the shovel so that one can be spotted while the other is loading. In case of a bank slide, the shovel can be backed away quickly.

In the parallel approach method, the shovel follows parallel to the bank, loading trucks from one side only. With this method, there may be less time lost in moving the machine back and forth. Little or no backing of trucks is required in spotting. It is more suited for filling railroad cars or belt conveyors with traveling hoppers.

• **Ramping into pits**—When digging small pits or basements down from ground level, it usually is best to load trucks on original ground level. This can be done if the pit is not more than 10 ft deep. The ramp can then be a 20% or 30% grade. In larger or deeper pits, it may be desirable to load trucks down at the shovel level, in which case the ramp should have a flatter slope of 5% to 10% and with a firm surface for truck traction.

• **Roads and trucks**—It is preferable to have roadways wide enough for two-way travel. If it is too costly to provide two-way roads, turnouts can be provided at reasonable intervals. Equipment should be on hand for occasionally grading the roadways and cleaning up the shovel loading area to hold the truck maintenance costs to a minimum. Best output from shovels and trucks requires a minimum of delay in truck travel and spotting.

Truck size should be around four or five times the dipper size,, in which case about 2 min are required to load a truck on the average, allowing for short moves and minor delays of spotting. If it takes another 10 min for the round trip plus dumping, the total time per truck would be 12 min. Since a truck is loaded every 2 min, six trucks would be required.

If the round trip travel time was 5 min for a total cycle of 7 min, four trucks should be used but each truck may have to wait 1 min or so. In addition, there should be available one spare or standby truck without driver in case of truck breakdown so that full output of the shovel can be maintained.

Trucks should all travel and unload at the same speed, with the speed held down to return to the

(Continued on page 123)

THOROSEAL *Restored* this Filtration Plant



BEFORE

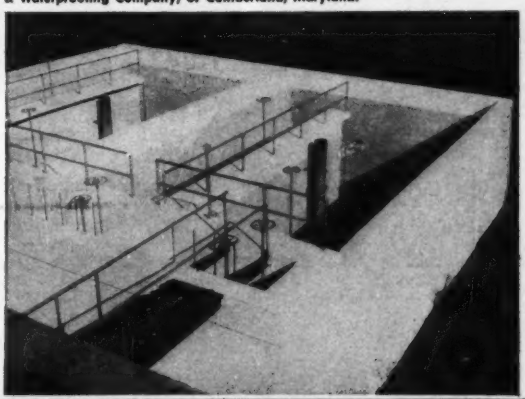
Example of complete break-down of masonry, due to penetration of water into body of concrete and action of frost in damp masonry.



It is amazing how THORO System products will correct a condition, such as shown in photograph. Concrete was sandblasted to remove all disintegrated material to sound concrete surface and reinforcing rods. Patching was done with THORITE Patching Mortar, bringing blistered areas to true and even lines, followed by two applications of WHITE THOROSEAL for protection.

AFTER

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WATERPLUG	THOROSEAL	QUICKSEAL
To Stop Leaks	To Seal Surface	For Beautiful Finish

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- Outstanding value at $4.90 for 50' and $7.95 for 100' lengths.

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HANDY WYTEFACE steel tape rules: 98¢ for 6' length; $1.19 for 8'; $1.49 for 10'.

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EARTHMOVING . . . Continued from p. 121

shovel just before the loaded truck leaves.

• **Best digging depth**—The rate at which the dipper fills depends on the nature of the material. The larger dipper requires a longer travel distance to fill than a smaller one. *Table B* shows the optimum height of bank for just filling the dipper without overcrowding so as to maintain full hoisting speed. Thus, if a shallow bank is being dug, it will be necessary to crowd harder to fill the dipper, or even two passes may be necessary. This will reduce the average output shown in *Table A*.

For depths greater than shown, the dipper does not need to be lowered all the way down on every pass, and there should be but little reduction in output until the face height approaches the boom point height where the digging effort is reduced. On high faces, the upper level should be removed first and then the lower level for each move of the machine. Higher digging faces require fewer moves of the shovel and comparatively less grading of the truck area. On the other hand, high faces are more likely to cave in.

• **Shovel-operating suggestions** — The objective is to handle the greatest possible yardage per day. The following procedures will help to maintain maximum production:

1. Plan shovel and truck locations for shortest swing.

2. Work at a digging face depth approximately the height of the shipper shaft. Dig the upper portion of a high bank first if necessary to work a high face.

3. Make frequent short move-ups so that it is not necessary to reach for material. Whenever possible, make moves when waiting for truck to get into position.

4. Crowd no more than necessary to barely fill the dipper. Average hoist speed is higher if the engine is not pulled down.

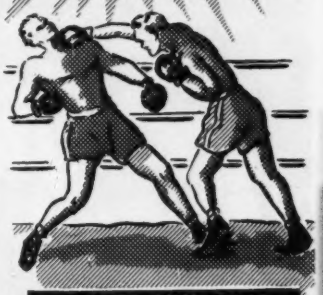
5. Do not lower the dipper all the way every time, only when necessary to clean up. It takes longer to hoist the full distance.

6. Start the swing as soon as the dipper is loaded and clear of the bank, retracting if necessary to clear the bank as soon as it is full.

7. In loading trucks, production can be gained if trucks are loaded

(Continued on page 168)

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DIFFERENTIAL-ACTING
PILE HAMMERS
18C, 30C, 50C and 80C

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This powerful hammer saves you valuable time other ways, too. Working parts are exposed, instantly accessible for quick lubrication and maintenance. Its durable construction assures you trouble-free operation, eliminates costly breakdowns that hamper progress. And for quick change-over, the open type fits the same leads and uses the same accessories as Single-Acting Vulcan.

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Sizes: 18C-30C-50C-80C meet all needs.

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CONSTRUCTION EQUIPMENT NEWS . . *A Preview of*

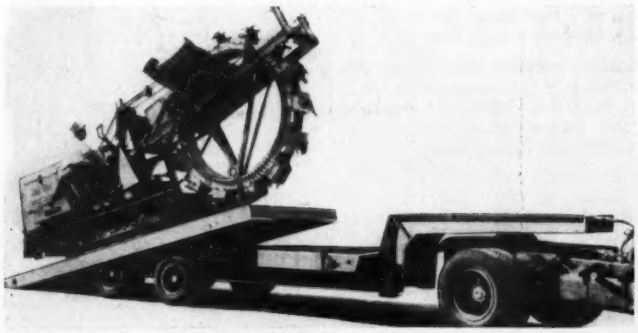
JAMES M. CONNOLLY, Equipment Editor



MOTO-BUG NOW HAS FORK-LIFT ATTACHMENT In a matter of minutes a Moto-Bug owner can dismantle his flat-bed platform, 10-cu ft hopper or scraper blade and add the latest attachment a 5-ft power-driven fork-lift with 1,000-lb capacity rating a 15-in. load center. Operator rides the rear, has full control of forward and reverse power and can turn in a 61-in. radius. Weight is only 1,500 lb., making it safe for timber ramps, etc.—**Kwik-Mix Co., Port Washington, Wis.**



NEW HAND CHAIN SAW IS ELECTRIC-DRIVEN Apparently unaffected by cold weather, this hand chain saw makes short work of 12x18 timbers which are too large for circular saws. Thin chain guide and special toothed chain leave exceptionally smooth cuts. Helper's handle is optional, since one man can easily handle the 20-lb rig. Models will take 115 or 230 v, ac or dc. It operates from a generator, too.—**Mall Tool Co., 7725 S. Chicago Ave., Chicago 19, Ill.**

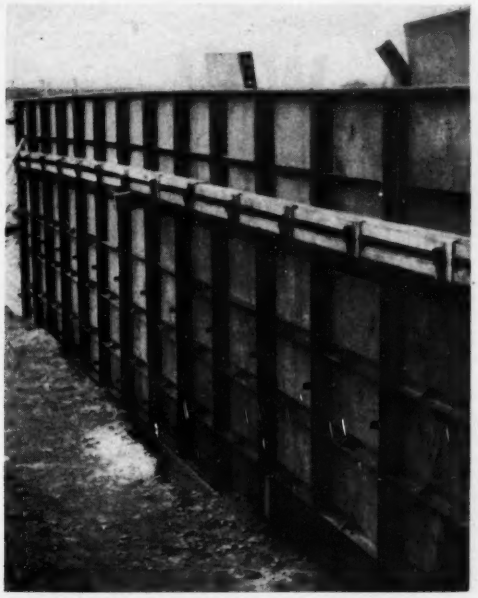


TILT TRAILER PERMITS LOADING AND UNLOADING BY ONE MAN The entire 96-in. wide platform on this La Crosse GTTA tilt trailer tips back at the release of a simple lock, enabling a machine—in this case a Cleveland trencher—to climb aboard without the need of skids, timbers or cribbing. In 5 min, with the platform automatically locked in place, one man can have the rig on its way to be unloaded just as easily at the next job. Walking beams that support axles also provide oscillation for equal load distribution over any type road surface. Rig has eight 15-in. tires and accessories.—**La Crosse Trailer Corp., La Crosse, Wis.**



TWO PARSONS TRENCHLINERS The new Model 202 Trenchliner has been designed for drainage and utility work and Model 215 (above) for special pipeline work. Both full crawler - mounted wheel - type machines, the 202 can dig in 30 separate speeds from 6.2 to 18.5 fpm.—**Parsons Co., Newton, Iowa**

New Machinery, Tools and Equipment That Will Help You on the Job



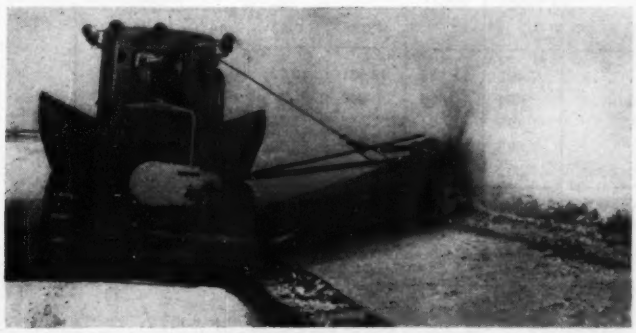
UNIT FORMS NEED VERY LITTLE HANDLING
Atlas Compo Forms are completely assembled square-edge units with steel frame and plywood face. Panels are reversible and come in 12-, 16-, 18- and 24-in. widths and heights from 4 to 10 ft. They're interchangeable, with no rights or lefts and after stripping them from a wall they can be laid flat for slab pours. Flat, break-back tie-bars are also reversible.—**Irvington Form & Tank Corp., 20 Vesey St., New York 7, N. Y.**



KWIK-STEAMER MOUNTED ON REAR OF TANKER
The tanker above holds 1,000 gal each of gasoline and water which feed into the Littleford Model 4000-G steamer mounted on its rear with a VE-4 gas engine and an 11-ft steam chest. Besides being portable and occasionally used to steam-flow asphalt tank cars drawn up on a siding, the setup provides all the steam for dryer, burner, gates and steam-jacketed lines. Contractor is Schmidt Construction Co., Pueblo, Colo.—**Littleford Bros. Inc., Cincinnati, Ohio**



PLANETARY-DRIVE REAR AXLE ON NEW TRUCK
This new Model Sterling-White 18-ton dump truck features a planetary drive rear axle which divides the power delivered to each rear wheel, according to the grip dictated by road and load conditions; thus spinning is kept to a minimum, or eliminated. With a short 161-in. wheelbase, hydraulic steering and 10 forward speeds, it can easily negotiate grades of 8 and 10% at 10 to 15 mph.—**The White Motor Co., Cleveland 1, Ohio**



DOMOR SNOW BLOWER ADDED TO CATERPILLAR ACCESSORY LINE
The tough job of highway snow removal is made lighter with a Domor Blower that works with a snow wing on a "Cat" No. 12 or 112 motor grader. A 48-in. propeller-type fan is driven by a power takeoff at a 500-rpm clip. Snow and ice are bladed on to the wing and into the fan which throws it well back from the right-of-way. The drive is the same as that used with the Domor Elevating Grader which can be used interchangeably. Sold and serviced by Caterpillar dealers, the Snow Blower has gained a fine reputation.—**Caterpillar Tractor Co., Peoria, Ill.**



ROC-JAK BREAKS CONCRETE
On lots of concrete breaking jobs use of explosives or ball drops are prohibitive or impractical. That's where the Roc-Jak takes over for such jobs as removing heavy engine bases, walls, abutments, revetments and the like. The job pictured

(Continued on page 130)

POINTING the WAY To Continuing Prosperity

The set of figures in the middle of this page is news of high importance to every American.

In effect, it says that there is no basis in fact for all this talk about a collapse of capital expenditures plunging us into a depression following the industrial build-up for defense.

Such talk assumes that without defense orders business would spend relatively little for new industrial plant and equipment. The figures below show that that assumption is not justified.

A Record in '52

As was expected, their plans call for another record-breaking volume of capital expenditures by business in 1952. But, as many did not expect, the McGraw-Hill survey also discloses plans for very heavy capital expenditures in each of the three years following. Expenditures now planned for those years are, to be sure, lower than those planned for 1952. But the significant fact is not that they are lower. Experience shows that plans made several years ahead always overlook many expenditures that are needed later.

The significant fact is that the expenditures already planned for 1953-55 are so high. For example,

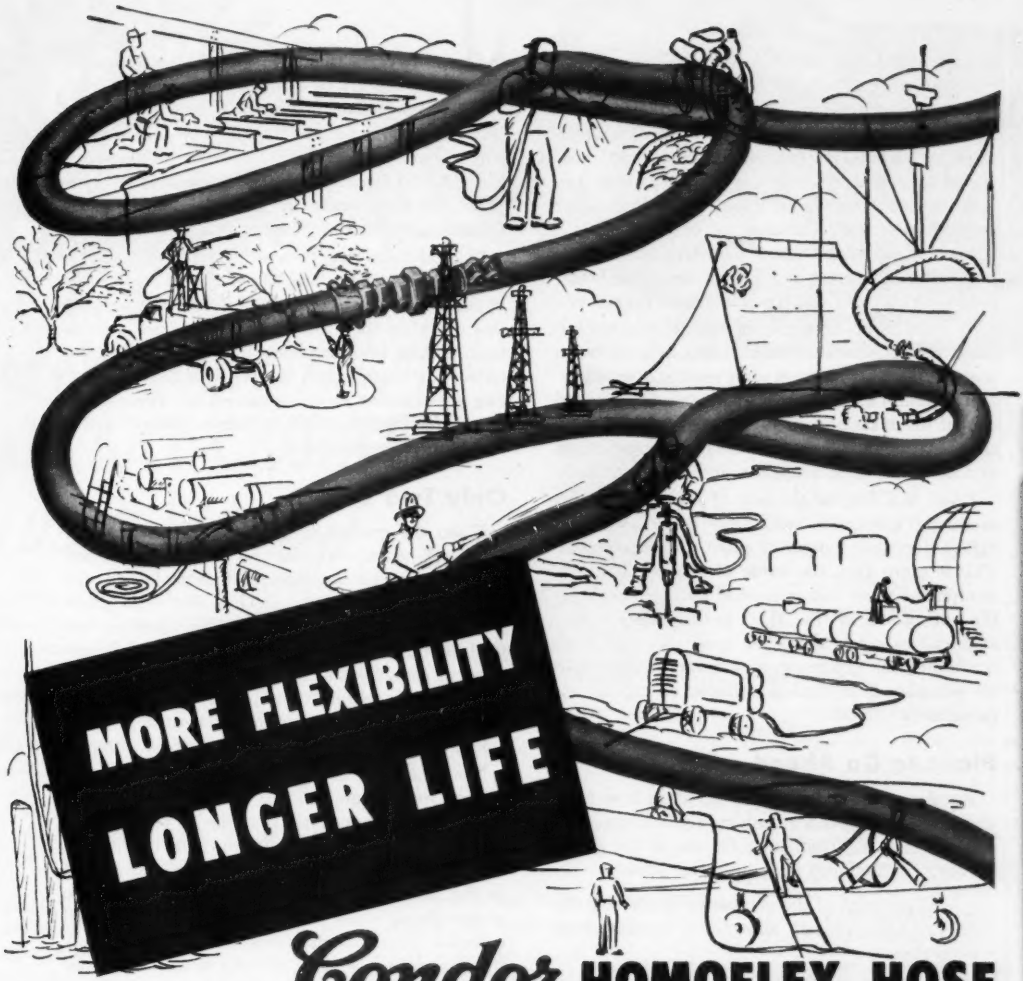
BUSINESS PLANS FOR NEW PLANTS AND EQUIPMENT (Millions of Dollars)

	Actual Spending 1950*	Actual Spending 1951*	McGraw-Hill Survey			
			Planned	— Preliminary Plans —		
			1952	1953	1954	1955
Manufacturing	7,491	11,141	12,921	10,028	8,525	8,194
Mining	684	806	943	415	321	358
Railroads	1,136	1,564	1,642	1,248	1,117	1,002
Electric & Gas Utilities**	3,298	3,676	3,948	3,360	3,204	2,748
Other Transportation & Communications	1,392	1,592	1,721	1,671	1,943	1,839
ALL INDUSTRY	14,001	18,779	21,175	16,722	15,110	14,141

*U. S. Department of Commerce
**Electrical World (A McGraw-Hill publication) and American Gas Association.

The figures come from the fifth annual McGraw-Hill survey of business plans for new plant and equipment. Companies were asked to report through that survey not only their plans for 1952, but plans they now have in hand for capital expenditures in 1953, 1954 and 1955, provided the money to carry them out can be obtained.

(Continued on page 128)

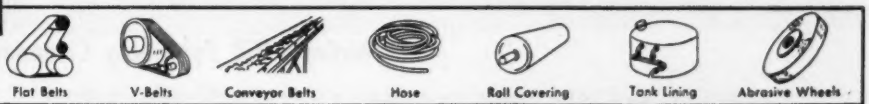


Condor HOMOFLEX HOSE

R/M engineers found a way to practically "homogenize" the wall of Homoflex Hose . . . By ingenious design, rubber tube and cover are blended together inseparably. The result, a hose wall with no pre-set twist, or stiffness. That's why Homoflex Hose is flexible as a rope, light and easy to coil and uncoil. Naturally, it lasts longer too. Made for air, water and other standard uses, Homoflex Hose has additional advantages described in Bulletin 6879D. Write for a copy • As the background suggests, Raybestos-Manhattan makes hose for every use. Your R/M Distributor will show you samples and discuss construction advantages.

MANHATTAN RUBBER DIVISION—PASSAIC, NEW JERSEY

RAYBESTOS-MANHATTAN, INC.



Other R/M products include: Industrial Rubber • Fan Belts • Radiator Hose • Packings • Brake Linings • Brake Blocks Clutch Facings • Asbestos Textiles • Sintered Metal Parts • Bowling Balls

those now planned for 1955 would be higher than those of 1950, which, at that time, were second highest in our history.

If these plans are carried out we shall have an essential element of continuing prosperity. Sustained expenditures for capital expansion and betterment account directly for a large share of our employment and consumer income. Moreover, consistent modernization of industrial plant raises production efficiency and brings more and better goods and services within reach of more consumers.

It is not to be expected, of course, that we can come down from the peak of the defense boom without readjustments in some sectors of business. But if capital expenditures by business are carried out on the scale now planned, we shall be able to take any necessary readjustments in our stride, and continue to increase our industrial strength.

From V-J Day to the end of this year, manufacturing industries will have spent over $60 billion for new industrial plant and equipment. This is more than the value of all the plant and equipment these industries had on their books at the end of World War II. It is this heavy outlay that causes some, assuming most postwar plans for industrial expansion and modernization will be completed, to fear a collapse of capital expenditure.

Plans to Go Ahead

But American industry still has plans to go right ahead expanding and improving its facilities. This was the most striking single finding of this year's survey.* It disclosed also that after 1952:

– 83 per cent of the companies answering the survey are planning substantial further modernization.

– 48 per cent will need more capacity to make their present products.

– 33 per cent plan additional capacity to make new products.

It cannot be too strongly emphasized, however, that these plans represent what American industry *wants* to do. They are a concrete expression of hope and aspiration. As such they are extremely important, for they dispose of the idea that business considers the job of expanding and improving its facilities as finished, or anywhere near finished.

But the plans carry no guarantee of accomplishment. If they are to be realized, business must have the funds to carry them out. There is no assurance that the money will be available if the present level of corporation taxes is continued. Eight out of ten companies, according to the McGraw-Hill survey, will rely entirely on profits and reserves to finance their 1953-55 programs. So, in calculating their programs for these years, the companies were asked to assume relief from "excess profits" taxation.

Federal taxes now take at least 52 per cent of a corporation's profits, and 82 per cent of any profits in the so-called "excess profits" bracket. Despite this drain on their funds, companies are able to finance their 1952 programs because (1) they are borrowing heavily, and (2) many of them are getting government loans or special tax concessions on new facilities installed for defense purposes. But these are emergency aids.

Only Two Ways

When the present defense program tapers off, there will be only two ways by which business can possibly increase its principal source of funds for new plant and equipment. One way is to make more profits before the tax collector takes his cut. And the only way many companies, already operating at capacity and high efficiency, can do that quickly is by raising their prices. That is an unpopular method. Also, with the return to more competitive markets, it might be self-defeating.

The other way is for the federal government to release its strangle hold on business profits. The so-called "excess profits" tax – the 82 per cent tax which is really a tax on business growth – should be repealed, effective January 1, 1953. And a cut in the basic tax of 52 per cent on all corporate profits should come not much later. That is by all odds the most important single step toward assuring that business plans already made for capital investment in 1953, 1954 and 1955 are carried out. It is the most important single step toward sustaining our present prosperity.

Through its plans for continued expansion and improvement of its facilities, American business clearly points the way to avoid the depression that so many have feared – and the Communists have so ardently hoped – would follow the peak of defense mobilization. It will be a tragedy for our country and for Americans in every walk of life if we do not insist that business get the chance to follow this wise and constructive course.

McGraw-Hill Publishing Company, Inc.

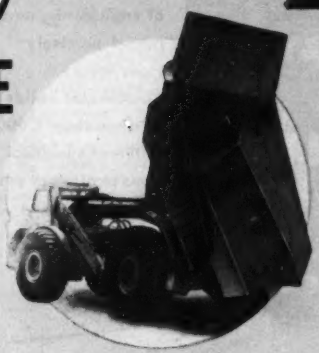
***Note – A copy of the full report of this survey can be obtained by addressing: Department of Economics, McGraw-Hill Publishing Co., Inc., 330 West 42nd St., New York 36, N. Y.**

NEW!
THE TR 200
REAR DUMP
MOTOR WAGON



TR 200 MOTOR WAGON SPECIFICATIONS

Here's your *NEW* LaPLANT-CHOATE *ROCK WAGON*



HERE'S a new addition to the well-known LaPlant-Choate line of Motor Wagons and Earthmovers. The 18-ton TR200 is a hydraulically-controlled rear dump wagon flexibly joined to the same big rubber-tired tractor so successfully used on the LaPlant-Choate TS200 Motor Scraper. It combines rugged power, big capacity and high speed with a host of other features to make this unit outstanding in its field.

FEATURES YOU'VE BEEN LOOKING FOR IN A REAR DUMP WAGON

- Stable wheel base assures absolute safety when dumping over edge.
- Rock Lug tires.
- Protected cab.
- Your choice of two diesel engines in the T 200 Tractor . . . a 176 HP Buda or a 165 HP Cummins.
- No obstructions in the wagon body.
- Tilts to 70° from horizontal.
- Full hydraulic control.
- Rear dump advantages.
- Available with heated body for use in cold climate to prevent freezing of material in load.

GENERAL

CAPACITY	
Struck, cu. yds.	11
Heaped, cu. yds.	15
Tons	18
OVERALL DIMENSIONS	
Length	25'9"
Width	10'7"
Height	10'0"
WHEEL BASE	13'7"
WHEEL TREAD	
Tractor	6'8"
Wagon	8'8"
TIRES	4—21.00 x 25—24 ply rock lug
BRAKES	
4-wheel air Timken-Detroit	18" x 7"
TURNING	
Width required 180° turn	31'3"
Degree of turn each way	60°
HYDRAULIC SYSTEM	LPC Fluid Power Unit
Steering—25 GPM	Model HU25
Wagon operation—40 GPM	Model HU40
SHIPPING WEIGHT	
(Approx. in lbs.)	40,000

T200 TRACTOR

ENGINE	
Buda Diesel Model 6-DA-779	176 HP
or	
Cummins Diesel Model HRB-600	165 HP
ENGINE CLUTCH	17" Lipe Rollway
TRANSMISSION	Fuller 5A1120
SPEEDS	
(at 1800 RPM—MPH)	From 2.46 to 21.63
STARTING METHOD	Electric 24 V
AIR COMPRESSOR	
Bendix-Westinghouse	7¼ cu. ft. capacity
ELECTRIC SYSTEM	12 V
FUEL TANK CAPACITY—U. S. gallons	70

R200 WAGON

MISCELLANEOUS DIMENSIONS	
Loading height, rear	5'6"
Loading height, side	8'3"
Bowl width	8'0"
Bowl depth, maximum	4'8"
Bowl length	11'3"
OPERATING METHOD	
Type of ejection	Rear dump, hyd. lift
Number of jacks (double acting)	2
Size of jacks	8" x 31"
DUMPING ANGLE	70°

LAPLANT CHOATE

MANUFACTURING CO., INC. — CEDAR RAPIDS, IOWA, U. S. A.



Cable-operated Scrapers in 6-, 8- and 14-yd. sizes for all makes of track-type tractors.



2- and 4-yd. Scrapers for track-type and rubber-tired industrial tractors.



Hydraulic and Cable-operated Dozers.

There's

Best Engine

FOR

EVERY APPLICATION

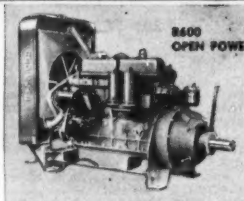
...THE...

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TAILORED TO THE JOB

Few and far between are the items of construction equipment that won't run best and cheapest on Continental Red Seal power. The reason lies in specialization—in Continental's long-standing policy of engineering each model precisely to its work. Continental builds to more than 1,000 different specifications to place at your disposal the one best power source for your job.



B600 OPEN POWER UNIT



GD157 BARE ENGINE (DIESEL)

In addition to 4- and 6-cylinder liquid cooled engines from 13 to 192 h.p., Continental builds 10 four-cycle air-cooled models for a wide range of industrial uses requiring from 1½ to 2½ h.p. Service and parts in every community. For information on this line address Air-Cooled Engine Divn., 12800 Kercheval Ave., Detroit 14, Michigan.



AD-7

INDUSTRIAL GASOLINE ENGINES

Model	Cyl.	Bore	Stroke	Displ.	Bare Engine H.P.
N56	4	2¼	3½	56	13 @ 2000 RPM
N62	4	2⅜	3½	62	16 @ 2200 RPM
Y69	4	2½	3½	69	21.4 @ 2400 RPM
Y91	4	2½	3½	91	28.5 @ 2400 RPM
Y112	4	2⅞	3½	112	32 @ 2400 RPM
F124	4	3	4⅛	124	36 @ 2400 RPM
F140	4	3⅛	4⅛	140	42 @ 2400 RPM
F162	4	3⅜	4⅛	162	49 @ 2400 RPM
F186	6	3	4⅛	186	60 @ 2400 RPM
F209	6	3⅛	4⅛	209	68 @ 2400 RPM
F226	6	3⅜	4⅛	226	73 @ 2400 RPM
M271	6	3½	4½	271	86 @ 2400 RPM
M290	6	3⅝	4⅜	290	92 @ 2400 RPM
M330	6	3¾	4⅜	330	104 @ 2400 RPM
B371	6	4	4⅜	371	106 @ 2400 RPM
B427	6	4⅛	4⅜	427	122 @ 2200 RPM
G134	4	4⅜	4½	134	32.2 @ 2000 RPM
G157	4	3½	4½	157	37.7 @ 2000 RPM
H227	4	3⅝	5½	227	54 @ 2000 RPM
H243	4	3¾	5½	243	58 @ 2000 RPM
H260	4	3⅞	5½	260	60.2 @ 1800 RPM
T371	6	3⅞	5½	371	119 @ 2400 RPM
T427	6	4⅛	4⅜	427	140 @ 2400 RPM
U501	6	4⅜	4⅞	501	160 @ 2400 RPM
R513	6	4½	5¼	513	164 @ 2400 RPM
R572	6	4½	5¼	572	182 @ 2400 RPM
R602	6	4¾	5½	602	192 @ 2400 RPM
S749	6	5⅛	5½	749	188.5 @ 1800 RPM

INDUSTRIAL DIESEL ENGINES

Model	Cyl.	Bore	Stroke	Displ.	Bare Engine H.P.
GD157	4	3½	4½	157	37.5 @ 2000 RPM
HD243	4	3¾	5½	243	53.1 @ 2000 RPM
HD260	*4	3⅞	5½	260	57 @ 2000 RPM
TD427	6	4⅛	4⅞	427	102 @ 2000 RPM
RD572	6	4¾	5½	572	137 @ 2000 RPM

*Available for Industrial applications only.

Continental Motors Corporation

MUSKEGON, MICHIGAN

ANY EQUIPMENT IS BETTER WITH CONTINENTAL RED SEAL POWER

(Continued from page 125)

here was done by Winston Bros. where a 7x9-ft block was removed easily by a pair. The manufacturer claims that one man with this machine and a jackhammer can perform the work ordinarily requiring six men with pneumatic breakers and moil points. In operating the Hydraulic Roc-Jak, one or more holes are drilled 2 ft deep and 3½ in. in dia. The Jak is then inserted in the hole with an equalizing shim or feather and the hand-operated pump attached for pressure. After the slack is taken up by ten pistons, additional travel of ⅛ to ¼ in. is sufficient to cause the break. Within 2 min, an operating pressure of 150 tons is developed. An original break can be enlarged with the use of two Roc-Jaks alternately using larger shims.—**K. O. Duncan Co., 1350 Wright St., Los Angeles 15, Calif.**

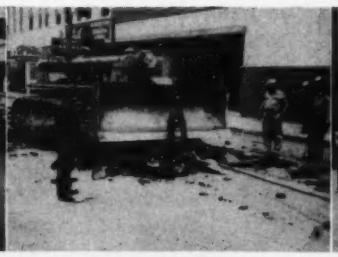


BRIDGE RAMP—During World War II, at the request of the U. S. Navy, the one-man bridge ramp shown above was designed to aid in promoting economical and safe materials handling. It is now available commercially. To place or relocate the ramp, the fork-lift operator need not dismount from the machine but can pick up the bridge by inserting the forks of the truck through two lifting rings. It is then transported to its new location (between platform and freight car above) and the forks withdrawn. Lift handles then drop into slots providing a flush riding surface. Locking pins, fixed in the floating arm, firmly secure it in place. Various sizes and types of bridge ramps can stand gaps from 5 to 58 in. with differentials in heights up to 7 in. Side stringers add rigidity and act as a safety guard. Outstanding safety feature is the locking device, a self-leveling, multi-holed locking device provided with locking pins, which travel in channels and fit into holes to prevent shifting after the bridge has been set in place.—**Elizabeth Iron Works, Inc., P.O. Box 360, Elizabeth, N. J.**

City replaces 38-year-old paving with more of the same



38-year-old Texaco Asphaltic Concrete pavement on William Street, Corpus Christi, Texas. Due principally to utility cuts made over the years, this was one of 39 blocks recently repaved by Corpus Christi.



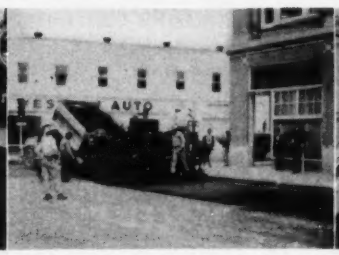
The old pavement was scarified and removed, after which the original foundation was cleaned thoroughly and given an asphalt tack coat. Photo shows street car tracks being removed prior to construction of new pavement.



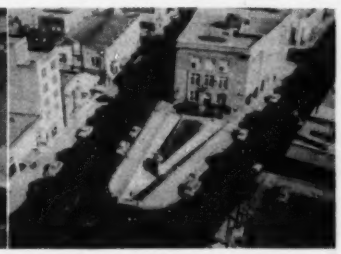
A leveling course of Texaco Asphaltic Concrete was spread over the old foundation by means of a blade maintainer. Approximately 50 pounds of asphalt mix per square yard was required for this course.



Compaction of the asphaltic concrete leveling course was performed by a pneumatic tired roller exclusively. Chief purpose of the leveling course was to correct the exceptionally high crown of the old streets.



The new Texaco Asphaltic Concrete wearing surface was laid by mechanical paver and compacted by 3-wheel and tandem rollers. J. M. Dellinger, Inc., the contractor, used extra men and equipment to expediate the work.



Peoples and Schatzell Streets, with the City Hall in the triangle. Both these streets were paved with Texaco Asphaltic Concrete in 1913 and were repaved with the same type of construction last year.

Congratulations to
CORPUS CHRISTI, TEXAS,
on its
100th ANNIVERSARY

Two helpful booklets about asphalt paving of all types can be obtained by city officials without charge by writing our nearest office.

Faithfully yours
50 TEXACO
for Fifty Years

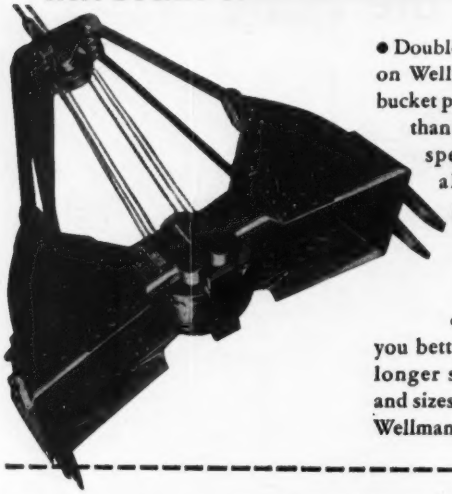
THE TEXAS COMPANY, Asphalt Sales Dept., 135 E. 42nd Street, New York City 17
Boston 16 Chicago 4 Denver 1 Houston 1 Jacksonville 2 Philadelphia 2 Richmond 19

TEXACO

TEXACO ASPHALT

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Performance like that is *important* on *any* paving job. It's the reason why so many contractors are now using STOW screeds on all their road paving jobs!

STOW vibrating Screeds:

1. Permit placing more than 300 cubic yards in less than 8 hours
2. Strike off and impact in one operation
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5. Have record of proven trouble-free performance *on the job!*

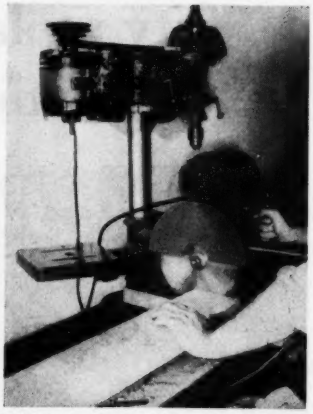
Stow screeds are available in beam sizes up to 30' long. Or, if you have, or prefer to build, your own beam, ask about the STOW Screed Package!



STOW VIBRATING SCREEDS
STOW MANUFACTURING CO.
31 Shear St., Binghamton, N. Y.

Write today for complete information on Stow Vibrating Screeds and the Stow Concrete Vibrator line. Request Bulletins 491 and 511.





RADIAL ARM SAW—A lightweight radial arm saw has been developed and placed on the market. It can be used with motors of from ¼ to 1 hp, depending upon individual requirements. Weighing only 50 lb, minus motor, it will fit any 2¾-in. drillpress column, and may be swung to one side when not in use without limiting the function of the drillpress in any way. Light enough to be set up inside a house during early stages of building for cutting studs and rafters on through interior finish, the saw takes blades up to 10 in. in dia. Known as the Mitermaster, it was designed primarily for cut-off and dadoing operations, although it will perform many other specialized operations including rabbeting, ploughing and shaping.—**R. W. Hendrick Co., 11 Selman St. Marblehead, Mass.**

ELECTRIC HEATING CABLE—A new flexible electric heating cable has been introduced to the industrial and consumer field consisting of a heavy-gage nickel-chromium resistor wire with tough abrasion-resistant insulating sheath. Equally useful around home or plant, it protects roofs, gutters, and downspouts from dangerous and costly accumulations of snow and ice; embedded in asphalt or concrete, it melts ice from hazardous home, shop, and office doorways, steps, sidewalks, driveways, or other pavements where severe and costly accidents may occur. It also prevents freezing of pipes, heats soil for faster seed germination and provides an easy solution in many circumstances where a portable, pliable, efficient heat source is required on the spot to cope with cold weather problems. Called Thermwire, it is available through distributors in two packaged sets; one set is 80 ft long, 400 w, 115 v; the other is 160 ft, 800 w, 230 v. Each has a 10-ft cold lead section and plug. Thermostatic controls are optional.—**Edwin L. Wiegand Co., Dept. M, 7500 Thomas Blvd, Pittsburgh 8, Pa.**

Users from Coast to Coast Praise the Adams No. 610











King of all Motor Graders for Rugged, Heavy-Duty Work

Wherever you go, you'll find the husky, 100 hp. Adams No. 610 hard at work on the roughest, toughest grading operations.

Pictured above are just a few of the many jobs that the No. 610 handles easily, economically . . . high bank sloping—material spreading and maintenance of haul roads on dam projects—precision subgrading for new highways—blending and spreading heavy road mix.

For users who do not need such brute strength and power, Adams builds a complete line of medium- and standard-duty motor graders—a machine with the right power and right capacity for every grading requirement.

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Only Adams has this exclusive combination of advantages

- **8 Overlapping Forward Speeds...Flexible working range speeds work—increases output—provides high transport speeds.**
- **Wide Range of Blade Positions—** Without Mechanical Adjustments . . . Saves Time in Adapting Machine to Needed Cuts.
- **Positive-Action Mechanical Controls** . . . Dependable, accurate adjustments—because they're geared . . . Easy, natural steering.
- **Ample Operating Clearances...Quick,** easy adaptation to work . . . Operator comfort, convenience, efficiency.
- **Fast, Easy, Servicing Plus World-Wide Dealer Service . . .** Saves time and money.

Make your next motor grader an **ADAMS**

Mobile CONCRETE MIX PLANT

KOEHRING 16-E *twinbatch,* with 6 m.p.h. rubber-tired mobility and high elevating boom, has unlimited application on all types of concrete construction work . . . for buildings, retaining walls, pilings, culverts, bridges, tunnels, widening highways and airport strips, batching into trucks, etc. Bucket rides on 60° elevating boom . . . discharges controlled batch into overhead forms, hoppers or chutes at a dumping height of 21 feet (higher with special boom). Boom also swings in an arc of 160° . . . speeds pouring of floors, foundations. This heavy-duty 16-E easily mixes and distributes up to 50 cu. yds. per hour. 7-second skip hoist, split-second Autocycle mixing controlled by Koehring Batchmeter, and vertical syphon-type water tank, all assure consistent, maximum-strength concrete at top batching speeds.

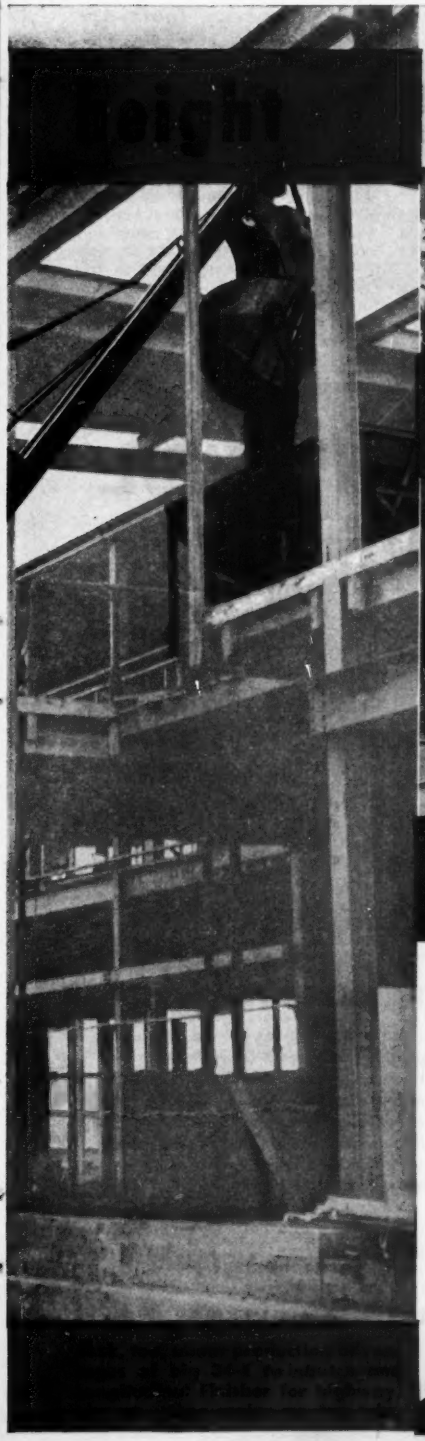
Productive work-time is increased because mobile, rubber-tired 16-E works over pavement without planking, makes self-powered moves job-to-job at 6 m.p.h. Get more facts from your Koehring distributor, or write for literature.

KOEHRING CO., Milwaukee 16, Wis.
(Subsidiaries: JOHNSON • PARSONS • KWIK-MIX*)*

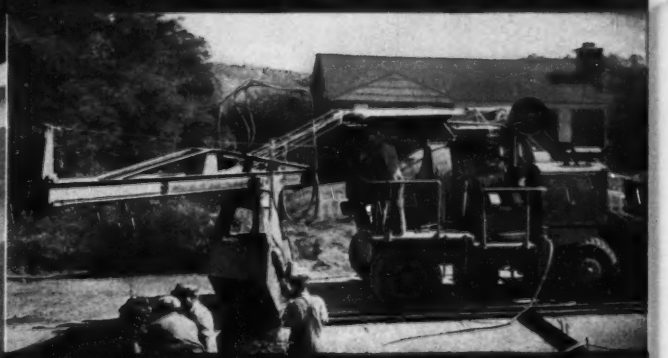


KOEHRING HEAVY DUTY

KOEHRING 16-E *twinbatch*®

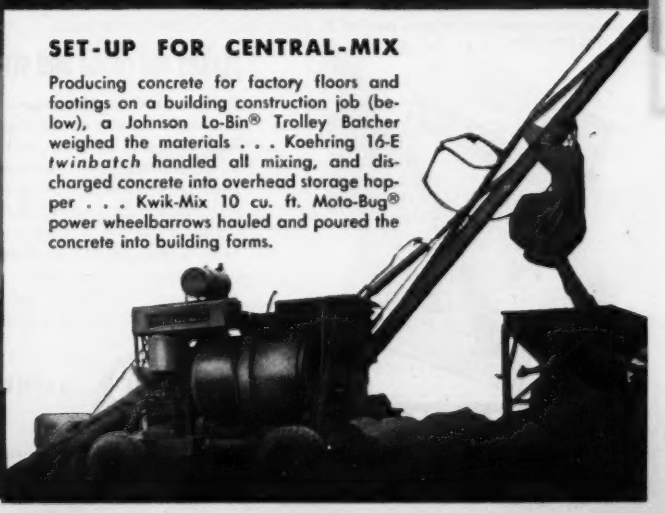






SET-UP FOR CENTRAL-MIX

Producing concrete for factory floors and footings on a building construction job (below), a Johnson Lo-Bin® Trolley Batcher weighed the materials . . . Koehring 16-E *twinbatch* handled all mixing, and discharged concrete into overhead storage hopper . . . Kwik-Mix 10 cu. ft. Moto-Bug® power wheelbarrows hauled and poured the concrete into building forms.



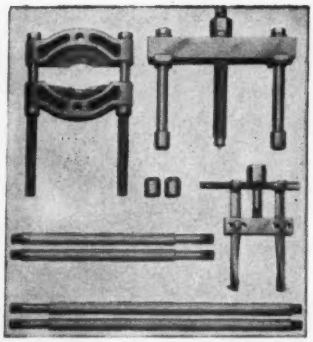
'US' on-the-job power cuts costs



Where high line power is not available, "U.S." power plants can speed your work—cut your costs. *Whatever* your electric plant needs, there's a "U.S." unit to fit the job.

Write for information

UNITED STATES MOTORS CORP.
356 Nebraska St., Oshkosh, Wis.



TRACTOR SERVICE TOOLS—The Owatonna Tool Co. announces a new set of Caterpillar tractor service tools developed with the cooperation of Caterpillar service engineers. The set contains tools designed for use not only on standard "Cat" tractors, but also for the newer DW-20 and DW-21's. The tools provide a wide range of utility and handle not only pulling but also installations involving gears, bearings, pulleys, shafts, sprockets, bearing outer races and bushings. Designated as Set No. CT-6, they are fully described in the OTC Bulletin CT-50. For complete information contact any OTC jobber, or the **Owatonna Tool Co., 370 Cedar St., Owatonna, Minn.**

Free Handbook
How to Use STEEL FORMS

FIND OUT **how you can cut costs with Atlas Steel Speed Forms. Make tremendous savings both on labor and materials.**

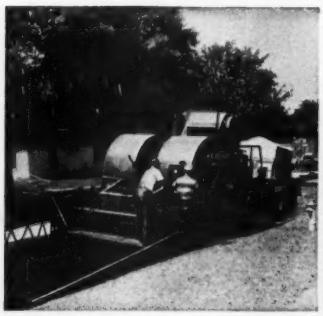
Handbook illustrates and describes faster system of setting up, stripping, cleaning, moving, and reusing forms for walls, slabs, circular tanks, manholes, modular structures, etc. All with Steel Forms that go together with wedge clips. No studs needed on walls. No girts on slabs. BUT get the complete story. Send us plans of your job. Let us give you layouts and cost studies to fit the individual conditions.

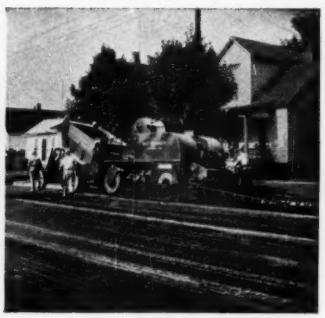
Also ask for Handbook No. MC that tells how to use Atlas Steel Forms.



IRVINGTON FORM AND TANK CORP.
20 VESEY ST., NEW YORK 7, N. Y.

Moto-Paver
Cuts Resurfacing Time-and Costs





Makes old roads and streets look–and ride–like new!

Moto-Paver does the complete mixing and laying job on resurfacing work—in one continuous operation. Speeds the job—cuts the cost. Produces a smooth, waveless surface even on rough, irregular pavement. Makes old roads and streets look—and ride—like new. Gives a uniform mix using beach sand, gravel, crushed stone or slag aggregates, and various bituminous materials including tars, cut-back asphalts, road oils or emulsions. Road speeds up to 25 mph. make possible quick moves from job to job.

Standard and heavy duty models for all types of resurfacing, retread and stabilization jobs under all kinds of operating conditions. See your local H & B distributor or write for Bulletin MP 49.

H&B ESTABLISHED 1887

HETHERINGTON & BERNER INC.
Engineers • Manufacturers
735 Kentucky Avenue Indianapolis 7, Indiana

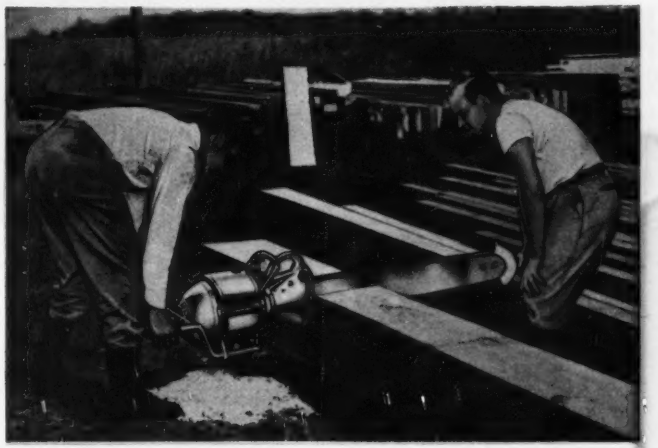
140,000 BTU HEAT MACHINE — Here is a heat machine which blows warm air out of its base along the floor, creating a heat blanket 6 ft high and eliminating the necessity for heating vast overhead areas in order to keep workers comfortably warm. This concentration of heat reduces heating costs by as much as 90%. Known as the Fageol Model PW-140, the machine employs a new principle of forced-air circulation. It burns regular furnace-type fuel oil of No. 3 or lighter grades, or kerosene. Self-contained, it has an attached 6-gal fuel tank and is equipped with wheels for easy portability. Dimensions are 21x33x58 in. Weight is 245 lb. The manufacturer recommends it for heating small factory or warehouse buildings, individual working areas, work shacks, or for drying plaster and cement. When installed in canvas dog houses, it can be used to preheat tractors, compressors and other pieces of construction machinery in winter weather.—**Fageol Heat Machine Co., Dept. M, Detroit 11, Mich.**



HEAVY-DUTY ELECTRICAL TAPE —This heavy-duty plastic electrical tape is recommended for anti-corrosion protection for pipes, cables and equipment laid underground where resistance to cuts and abrasion by rocks during backfill is important. It is also recommended for protecting and insulating cable and high-tension leads subject to wear, abrasion and rough handling, and for bus bars carrying high voltage. Designed for applications where more-than-average mechanical strength is needed, the tape has a black vinyl plastic backing 20 mils thick. It has a dielectric strength of 22,500 v, an insulation resistance of 200,000 megohms, and an electrolytic corrosion factor of 1.0. The tape, designated "Scotch" brand electrical tape No. 21, is available in 36-yd rolls in widths from ¼ to 16 in.—**Minnesota Mining and Mfg. Co., 900 Fauquier St., St. Paul 6, Minn.**

New! LIGHTWEIGHT 9 HP DISSTON INTERMEDIATE CHAIN SAW

that handles any woodcutting job!



Here's the power chain saw you've been waiting for—the new 9 hp, 2 cylinder Disston Intermediate Chain Saw, the DA-211. Powerful enough to handle any woodcutting job—yet its balanced light weight makes it easy to heft. It will give you many years of satisfying, trouble-free cutting power.

ALL-AROUND TOOL! The Disston Intermediate is perfect for right-of-way and line clearance, cuts mine props and bridge timbers with ease, has hundreds of uses in shipyards and on railroads, as well as for general plant maintenance.

LABOR-SAVING? And how! Time-saving, too. The DA-211 can do in a few minutes the work of an hour's manual sawing.

HENRY DISSTON & SONS, INC.

Philadelphia 35, Pa., U.S.A.

In Canada, write: 2-20 Fraser Ave., Toronto 3, Ont.



THE DISSTON DA-211 INTERMEDIATE CHAIN SAW

Powered by Mercury Gasoline Engine

LOOK AT THESE GREAT FEATURES...

2 cylinder, 9 hp Mercury gasoline engine • Perfect balance—no vibration • Automatic clutch • Automatic chain oiler • Dependable float-feed carburetor • Simplified, positive controls • Self-rewinding starter • Rugged magnesium castings • Available with "L" or "C" chain • 2' to 7' (incl.) new narrow-profile slotted rails • Transmission swivels to any position—can be easily removed

Henry Disston & Sons, Inc. (Adv. Dept.)
Philadelphia 35, Pa., U.S.A.

Please send me information on the 9 hp DA-211 Disston Intermediate Chain Saw.

Name_____

Street_____

City_____ State_____

2C

WATER AND GRIT...



DON'T DAMAGE an OWEN BUCKET

With a less expertly designed bucket water would likely carry abrasive sand and grit into the bearings causing excessively rapid wear and deterioration.

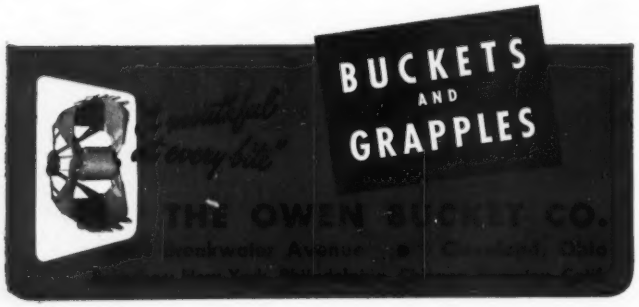
Not so with an Owen.

Years ago Owen engineers learned the hazards of difficult underwater service.

And through experimentation and experience they designed bearings that retard these destructive forces.

For the protection of your buckets and in your own financial interest "buy an Owen" equipped with *abrasion resisting, pressure-lubricated bearings.*

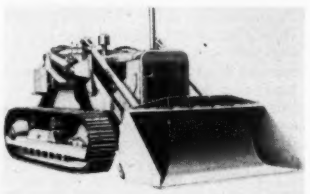
Get the interesting Owen catalog.





SAFETY AIR HOSE—A midwestern contractor, in collaboration with a leading public utility company, put this Invincible Safety Air Hose through a series of tests to determine the extent of its safety protection. It has a braided copper ribbon of 832 strands which forms a high current-carrying medium and is securely bonded in the abrasion- and heat-resisting hose. On a deliberate short circuit with an electric timer set for 1 sec with a current reading of 2,250 amp and a voltage reading of 480 v, the hose became warm but not enough to be uncomfortable; yet it tripped the circuit breaker within 1 sec. The test proved that the hose could be held without any danger of an electric shock. Inspection of the original test lengths used continuously for a year in normal service indicated that, in addition to its safety features, this hose will far outlast many ordinary types. It is available in ½ in. ID sizes, in 4- and 5-ply construction from **Mercer Rubber Corp., 66 Reade St., New York 7, N. Y.**

SAFETY CONNECTING LINKS—Tensile strength of the Wedglok safety connecting links exceeds published strength of comparable alloy chain. The spacer is in compression when the link is carrying a load, and it will not shear or loosen if the projecting spacer points are properly peened. With just two sizes of links, connections can be made for a broad range of chain sizes. Equally efficient for permanent connections or for quick emergency repairs, they can be assembled anywhere without special equipment.—**Interstate Drop Forge Co., Milwaukee, Wis.**



HANDY TRACTO-SHOVELS OFFERED—A complete line of shovel-mounted tractors, with standard bucket capacities up to 4 yd (light material buckets up to 7 yd) is now available in all four

(Continued on page 146)



ON TOP

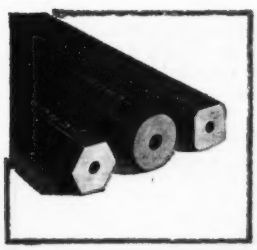


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UNDERGROUND

it's

CRUCIBLE HOLLOW DRILL STEEL all the way



Whether driving a tunnel or clearing a mountain pass — tough Crucible Hollow Drill Steel gets the job done better, faster — at lower cost per foot drilled. This quality steel is built to take the punishment of around-the-clock operation of modern, high air-pressure rock drills. And you have the assurance of minimum breakage . . . and an end to expensive bit loss.

That's because of Crucible's rigid *pre-testing* of every *lot* of Crucible Hollow Drill Steel. What's more, Crucible Hollow Drill Steel is backed by the experience of quality steelmakers. Then too, field metallurgists with broad background on *your* job are available — should you need them.

Insure the quality of your job — cut costs — use Crucible Hollow Drill Steel.

CRUCIBLE first name in special purpose steels

52 years of Fine steelmaking **HOLLOW DRILL STEEL**

CRUCIBLE STEEL COMPANY OF AMERICA, GENERAL SALES OFFICES OLIVER BUILDING, PITTSBURGH, PA.

REX HIGH SPEED • TOOL • STAINLESS • ALLOY • MACHINERY • SPECIAL PURPOSE STEELS

QUEBEC RESERVOIR . . . Continued from page 95

of 12 ft and the sand scooped out from the interior. Circular bracing, made of 12-in. B. C. fir, then was installed at ground level around the inside of the shell. Driving was resumed to a depth of 24 ft when bracing was again installed at ground level and the sand again removed from the interior. This process was repeated till the piling reached a depth of 40 ft and the sand had been removed to a depth of 34 ft.

As anticipated, the water level settled at 5 ft below high-water mark and 17 ft below grade, giving a reservoir with a capacity of 108,150 gal.

A platform covering one-half the area was built inside the well at a height of 4 ft above the water level to carry the pumping equipment. The top was covered over with a roof of tarpaper-covered 2-in. plank resting on heavy wooden trusses and topped with 3 ft of sand. With this roofing, frost has not affected the pumps. With an outside temperature of –32 deg F, the inside temperature 6 ft above the pump floor did not drop below 38 deg F.

In designing the trusses a safety factor of four was used, without considering that a 17-ton Tournadozer would work across the roof. This is what happened when the sand covering was put on, and although the trusses groaned a bit, nevertheless they held.

The pumping equipment consists of three horizontal single-piston double-action pumps, each capable of delivering 28 gpm against a 160-ft head. All three are driven electrically, but one of them can be operated by an auxiliary gasoline engine if necessary. These are the main service pumps which discharge directly into the old 2,000-gal. pressurized tanks and provide an ample supply of water under normal conditions.

In addition to these pumps there is a 20 hp 550-v right-angle gear-driven centrifugal pump with a capacity of 225 gpm against a 275-ft head. This pump, for use in case of fire or emergencies, is connected directly to the main water line and can, if necessary, bypass the pressurized tanks. It is controlled electrically so that should the water level in the pressure tanks become too low, its operation would be automatic.

This system is supplying water and fire protection for a population of approximately 900 persons and to date at no time has the water in the reservoir dropped more than 8 in. It has been calculated that the system is large enough to supply the requirements of a town of 1,500 and is capable of supplying 300 gpm for an 8-hr period in an emergency. Because of the sprawling layout of the camp with its auxiliary fire protection by way of fire extinguishers and sand boxes, this is considered ample.

The anticipated life of the installation is 25 yr and, since the total cost was slightly less than $27,000, it is considered a sound and economical method of providing an adequate water supply.



Select YOUR FAVORITE UNIT STAR

* 357 Mobile Type ½ Yard Excavator Crane up to 9 tons.
* 614 Crawler Type ½ Yard Excavator Crane up to 8 tons.
* 1020 Crawler Type ¾ Yard Excavator Crane up to 10 tons.
* 1520 Mobile Type ¾ Yard Excavator Crane up to 20 tons.
* 1014 Truck Crane ½ Yard Excavator Crane up to 12 tons.
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All Models Convertible to ALL Attachments.

You'll like this versatile mobile UNIT. Designed to handle a wide variety of jobs, both on and off the highway. It lifts, loads, hauls and digs . . . has 1001 uses. Works efficiently in close quarters . . . goes anywhere. Rugged, compact, sufficiently narrow for convenient road travel. Smooth, effortless hydraulic steering. Handles as easily as an automobile. Powered by ONE engine . . . controlled and operated by ONE man. Full Vision Cab gives operator complete visibility in ALL directions. Gas or Diesel power. Low initial cost. Low upkeep. Write for copy of Bulletin L-301.

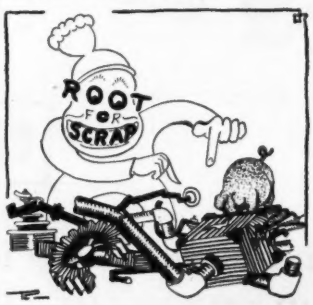
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UNIT "T-V SET"!
Novel UNIT brochure portrays the complete line . . . illustrates 10 reasons why UNIT is a better machine. Send for your copy. It's Free.

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SHOVELS • DRAGLINES • CLAMSHELLS • CRANES • TRENCHOES • MAGNETS





DOMOR

ELEVATING GRADER

DID THIS JOB IN 1/2 THE TIME!

Domor Elevating Graders — for use with "Caterpillar" No. 12 and 112 Motor Grader — can load, cast, strip, ditch and terrace, with an amazing production capacity. Your present grader can be equipped with a Domor . . . and converting from grader to blade only requires a few man hours.

LEE CONSTRUCTION CO. CUTS RESURFACING JOB TIME

On a resurfacing project in San Leandro, Lee Construction Co. cut a rock-surfaced street, eight miles long, to a new grade line — and did it in *half* the normal time — with a Domor Elevating Grader. With over 5,000 cu. yds. to remove, the economical Domor loaded out 288 *yards each hour* — three 8-yd. trucks every 5 minutes! The subgrade required only one blading and it was ready for base materials.

J. W. Lee, V. P. of the Lee Construction Company, reports, "We were pleasantly surprised at the performance of the Domor and D12 on this job. It just suited the job and we did it in ½ the time required with regular equipment."

You, too, can cut time and costs on loading, casting, excavating jobs — with the Domor Elevating Grader. Ask your Domor-"Caterpillar" Dealer for full details . . . let him show you a Domor at work. He's at your service!

ULRICH PRODUCTS CORPORATION

ROANOKE, ILLINOIS

STURDILITE

The HEAVY-DUTY FLOOD LAMP THAT

Lights Your Work Better . . . Gives Longer Service at Lower Cost



Vibration-absorbing Base

Specially Designed for Efficient Service on
Shovels — Excavators — Drag-lines
Roadbuilding Equipment
Locomotive Cranes — Tractors



"BUILT to take it," say users of STURDILITE Heavy-Duty Flood Lamps, after years of trouble-free service. Hermetically sealed-beam lamp—no reflector to become tarnished. Complete assembly mounted on rubber cushioned base that absorbs vibration and shocks. Available in 6-8, 12-16, 24-28 and 110-120 voltages.

COMPLETE BULLETIN, specifications, and quantity prices sent promptly upon request.

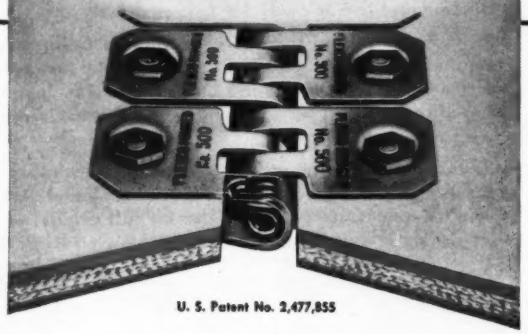
Metal Spinning Division

PHOENIX PRODUCTS COMPANY

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FLEXCO HINGED
BELT FASTENERS



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- For belts ⅜" to ½" thick.
- A FLEXCO fastener that is HINGED. Has removable hinge pin.
- Troughs naturally, operates through take-up pulleys.
- Strong, durable . . . pull or tension is distributed uniformly across joint.

Order From Your Supply House. Ask for Bulletin HF 500.

FLEXIBLE STEEL LACING CO. 4699 Lexington St., Chicago 44, Ill.

MARION SHOVEL . . .

Continued from page 82

shafts, as well as boom foot lugs, all part of the main frame structure.

The all-welded gantry is designed high (32 ft 4 in. clearance) to hold loads on the four 2⅛-in. boom support cables to a minimum. Its wide spread helps steady the boom in swinging. Front legs are box-section; back legs are eye bars.

In the swing mechanism, all gears except main pinions are enclosed. All gear cases are flood-lubricated by motor-driven outside pumps.

The boom is all-welded alloy steel 43 ft 8 in. long braced by double rods on each side to limit boom roll. The hoist line is a single 2-in. cable double-ended on the drum, with the bight held by a sheave in the bucket bail. There is no boom hoist, but the boom angle can be adjusted between 45 and 50 deg.

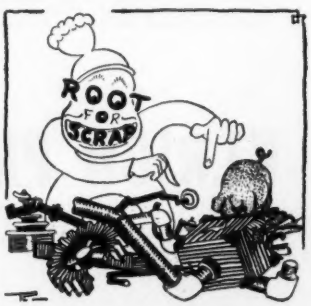
For the Operator

The cab is sectional so any panel can be removed independently. Sides and front are 3/16-in. plate; the back is ⅜-in. plate. All operations, including propel and steering, are controlled from the operator's station, which is placed at an angle to face the operator toward the dipper.

Electric Steel Co., Portland, Ore., made the 10-yd dippers.

The 191-M is a triumph in shovel engineering, for Marion has produced a big shovel with the fast operating characteristics of a small rig. Every effort has been made to make the shovel easy to operate, to service and to maintain. Each and every operation is controlled through Amplidyne Ward-Leonard control.

Construction welcomes this great machine.



Like Spring and Baseball

they Go Together





CONTROLLED TRACTION—product of exclusive All-Wheel Drive and All-Wheel Steer—makes it easy for an A-W Power Grader to deepen ditches and widen roads. The powerful front drivers ride the shoulder; the rear drivers follow the ditch line, and a beautiful "job of work" is turned out. Yes, All-Wheel Drive and All-Wheel Steer *go together . . . work together* on every job. Why be satisfied with less in your next grader?

AUSTIN-WESTERN COMPANY · *Subsidiary of Baldwin-Lima-Hamilton Corporation* · **AURORA, ILLINOIS, U.S.A.**

BALDWIN BLH LIMA-HAMILTON

What He's Gained by Keeping Records on Wire Rope



This man buys and uses a lot of wire rope. For years he never knew exactly which brand was giving him the best service. Then he realized he'd better find out; it could save him important money.

So now he's keeping records on all his major ropes. He knows the date they go to work, the type of work they do, and just *how much* they do. His records enable him to check on different brands; they show him which make of rope is doing the biggest job per dollar spent. And he's wondering why he didn't adopt the system years ago.

Do you keep records like this? We at Bethlehem encourage the practice, for it's the only real way you can determine a "good buy" in rope. And when Bethlehem rope is involved in any comparisons you make, we naturally feel that it will soon demonstrate its basic soundness, durability, and all-around economy.

In every detail the Bethlehem product is made to the highest standards of quality. If it were not, we'd be foolish to suggest a means of comparison with other brands. But the plain truth is, Bethlehem wire rope will slug it out on any job you have . . . and your own records will prove it!



BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

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LET YOUR RECORDS TELL YOU!





See your P&H Dealer

P&H Excavators and Truck Cranes are more easily converted for the various types of service shown below — with hoist and digging drums on one shaft, the need for auxiliary shafts and gearing is eliminated. You also have a choice of gas, Diesel or electric power. Ask for literature on the size you need.

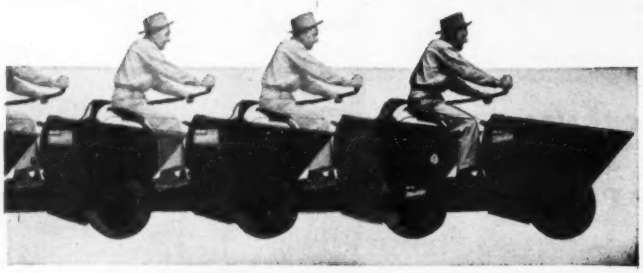
POWER SHOVELS • CRAWLER AND TRUCK CRANES • OVERHEAD CRANES • HOISTS • ARC WELDERS AND ELECTRODES • SOIL STABILIZERS • DIESEL ENGINES • PRE-FAB HOMES

(Continued from page 138)
models of Allis-Chalmers crawler tractors, according to a joint announcement made recently by that company and the company which makes the scoops. The bucket sizes vary in capacity to match the weight and horsepower of each tractor. The HD-9G mounts a 2-yd bucket and dumps at a maximum height of 11 ft, 4½ in. The HD-15G employs a 3-yd bucket and has a dumping height of 12 ft, 8 in., while the huge HD-20G torque-converter-driven tractor uses a 4-yd bucket, dumping at a height of 13 ft, 5 in. Special buckets for handling light materials, such as snow and soft coal, are available for all four Tracto-Shovel models —range in capacity from 2 yd on the HD-5G to 7 yd on the HD-20G. To increase the versatility of these units, there is also available for most models a variety of interchangeable attachments, including special buckets, snow plows, bulldozer blades and rock forks. By simply removing four pins, each of these units may be interchanged. **—Allis-Chalmers Mfg. Co., Tractor Division, Milwaukee 1, Wis.**



"FASTEST STOP AND GO CONCRETE HANDLING"





GAR-BRO power-carts

NIMBLE AS A TENNIS STAR the Gar-Bro Power-cart starts and stops fast . . . *can reverse direction instantly* . . . turns within a radius of four feet and is practical on a five-foot runway.

★ Here's the power, speed and capacity to move 14 cu. ft. or a ton of material up steep grades or over rough, uneven ground at speeds up to 12 mph.

★ Positive control enables the operator to discharge a spoonful or a full load.

★ Get the facts today; ask for a demonstration.

GAR-BRO MANUFACTURING COMPANY

2415 EAST WASHINGTON BLVD., LOS ANGELES 21, CALIF.

EQUIPMENT GAR-BRO ENGINEERING SERVICE

for faster concrete handling



SPRING CLIPS—A simply constructed wooden cradle, three carrying straps and a new type spring clip jointly contributed to the speedy placement of perforated pipe on two playground jobs in Cleveland, Ohio, recently. J. & S. Galier Co., Cleveland contractors, installed more than 12,000 ft of Bosco perforated plain end pipe by using a fast-working tool, specially designed by the manufacturer to hook Tru-Line spring clips into the perforations at pipe ends. Normal practice for builders was to speed up pipe-jointing operations by clipping two or more pipe lengths together above ground. The Galier Co. expedites the installation work even further by jointing as many as seven lengths—or 14 ft—of pipe before lowering the completed unit into the trench. With the seven sections joined together securely, three workmen pick up a carrying strap each and lower the section gently into the trench. The clips lie flat against the pipe, making bell holes and collar depressions in the bedding unnecessary. They are also flexible, yet weigh only about 1 oz. Two clips, one on each side of the pipe, are used to tie a joint and assure satisfactory alignment. Both the perforated plain-end pipe and the spring clips are products of **The Bowerston Shale Company, Bowerston, Ohio.**

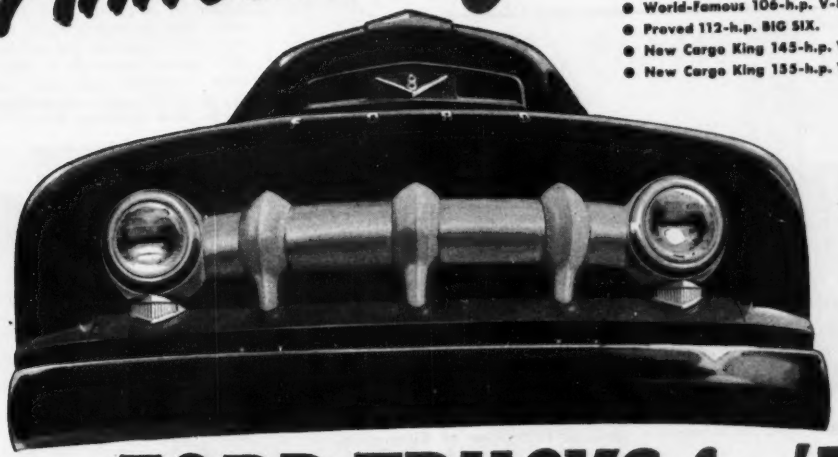
ROAD GRADERS—Two new road graders known as the Model 42, single drive, and 44, tandem drive have been put into production. In the 40-hp class, they weigh up to 15,000 lb, carry 10- or 12-ft blades, and are suited for medium class, ditch-to-ditch service, with 1:1 slopes. Designed to fill the gap between the light 30-hp maintenance grader and the higher priced heavy-duty ma-

(Continued on page 148)

Announcing

NOW! FIVE GREAT FORD TRUCK ENGINES!

- New 101-h.p. Cost Clipper Six.
- World-Famous 106-h.p. V-8.
- Proved 112-h.p. BIG SIX.
- New Cargo King 145-h.p. V-8.
- New Cargo King 135-h.p. V-8.



New FORD TRUCKS for '52

Engineered for modern, low-cost Speed Hauling

NOW FIVE great Ford Truck engines permit better "tailoring" of truck power to your specific hauling job! Over 275 series power combinations. Only FORD in the low-price field gives you so many power choices, series for series, in ½-ton to 3-ton trucks!



3 NEW ULTRA-MODERN HIGH-COMPRESSION, LOW-FRICTION, OVERHEAD-VALVE ENGINES!

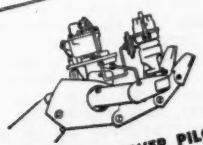
New Ford short-stroke LOW-FRICTION design saves up to 14% on gas! Two V-8's, one Six! Fully-proved! High-compression punch with *regular* gas!

EVERY drop filtered
EVERY time around



NEW FULL-FLOW OIL FILTER

Ford's new Full-Flow oil filter removes harmful dirt and abrasives from *every* drop of oil. Result: engine life is prolonged, ring and cylinder wear reduced.



IMPROVED POWER PILOT

Another Ford exclusive in the low-price field! This proved fuel-feeding and fuel-firing system gives you the most power from the least gas.

Availability of equipment, accessories and trim as illustrated is dependent on material supply conditions.

See "Ford Festival" starring James Melton on NBC-TV

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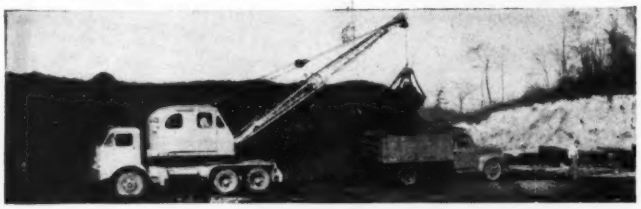
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Reclaiming coal



Rupp Brothers, Incorporated, general contractor of Kittanning, Pennsylvania, use one of their five MICHIGAN Truck Excavators to reclaim coal for the Powell Coal Company. Coal formerly lost by diverting coal washings into rivers and streams is now pumped into settling pits and reclaimed by the mine. Rupp Brothers use this ½-yard MICHIGAN clamshell to spread the still wet coal dust over high ground for drying.

Says operator Ken Rupp: "MICHIGANS are tops with me. They're fast and easy to maintain. I especially like the air controls". States A. L. Rupp, president: "Our MICHIGANS require very, very little maintenance. They're always available so we get contracts others can't handle because their equipment is tied up for repairs".



Make your next excavator-crane a MICHIGAN . . . you, too, will be 'way ahead. Send for details.

MICHIGAN POWER SHOVEL COMPANY

495 Second Street, Benton Harbor, Michigan, U.S.A.

(Continued from page 146)

chines, they can be purchased with gasoline or diesel engine, with or without power circle turn, leaning front wheels, blade side shift, front-end loader, scarifier—and a wide selection of tire sizes both front and rear. The machines have five forward travel speeds and one reverse, 90-ft tubular frame 86-in. blade base, 19-in. front-axle clearance, and 735 lb blade pressure.—**Meili-Blumberg Corp., New Holstein, Wis.**



ACID-RESISTANT GLOVES—These canvas work gloves have been given a protective coating of Vinylite resins which resist acids, solvents and abrasion. Workmen handling acids or active chemicals are protected by the extreme chemical inertness of the coating. The combined chemical and abrasion resistance of the coating makes these gloves especially suitable for use in chemical processing plants and in most industries employing raw materials where economical long-wearing qualities are desired. They are available in both gauntlet and knit-wrist style from **Tilloston Rubber Co., Inc., Needham Heights, Mass.**

SIMPLIFIED PIPE LAYOUT—Engineers, piping foremen, draftsmen, welders and sheet metal workers can make rapid layouts—right on the job—of pipe bends up to 126 deg. Plastic rigid sheet, used in making the long pointers, insures the same accurate reading under all weather conditions. The computer gives direct readings in steps of 1 deg or less, on pipe diameters from 1 to 20 in. The circle divider gives instant reading of circumference divisions from ½ to 1/16 in. in fractions of an inch for any circle up to 72 in. in dia. Both instruments are available in folding type for field use and flat type for the shop. Both measure 12 in. square flat, 12x4½ in. folded and ready to fit pocket or tool box. Made of Vinylite plastic by **Interstate Sales Co., 123 East 18th St., New York 3, N. Y.**

MIXERMOBILE MANUFACTURERS

completely *Portable* CONCRETE

- WEIGH BATCHING
- MIXING
- ELEVATING

PLANT

CAPACITY UP TO 50 CU. YDS. PER HOUR

FROM RAW MATERIALS TO POURED CONCRETE

This ruggedly built trio means more jobs covered...reduced labor costs...savings in time and expense of making stationary installations. All functions are performed by one operator on each unit. Completely portable equipment travels at normal highway speeds...setup time for complete operation is 15 minutes or less.



MIXERMOBILE WEIGH BATCHER · Model WB-1

Completely portable unit weigh batches aggregate on the job. Can be charged with front end loader from storage piles or directly from dump trucks. Single operator sets up unit for operation in 15 minutes. Weigh batches up to 50 cu. yds. per hour.

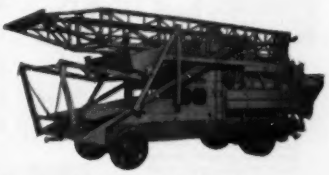
- Three 7 cu. yd. bins and 2 cu. yd. skip store up to 23 cu. yds. of aggregate.
- Charging skip hydraulically operated.
- Bin selector located by skip control directs skip.
- Equipped with either dial or beam scales.
- Weight, 17,800 lbs; height, 12 ft.; width, 8 ft.; overall length, 28 ft. (with skip down).
- Mounted all around on 8.25x20 tires.



2-YD. MIXERMOBILE · Model M-7

Completely mobile concrete mixing and elevating plant eliminates cost of hauling and erecting expensive equipment. One man handles the entire operation from mixer to deck.

- Improved batch-timer and counter insures positive mixing time.
- New electronic water meter gives unerring accuracy.
- Sturdy planetary drive hoist clutches give extra power, durability.
- Mixes up to 50 cu. yds. per hour.





SCOOPMOBILE · Model C. The versatile Scoopmobile with exclusive planetary drive has 7 "quick change" attachments. Standard ¾-cu. yd. scoop bucket permits operator to keep Weigh Batcher unit performing to full capacity.

- Loads and transports aggregate.
- Transports, elevates and pours concrete.
- Lifts and places form panels, timbers, etc., up to 4,000 lbs. capacity.

ATTACHMENTS INCLUDE: Scoop buckets in various sizes, swivel and standard type concrete hoppers in ¾ cu. yd. capacities, lift forks, crane boom, track extensions with braces up to 26 feet overall.

Write for literature and address of your nearest dealer.

Mixermobile Manufacturers reserve the right to make improvements in design and specifications without notice.

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Marvel-Schebler Carbureters are specified as original equipment on many leading industrial engines and tractors because they give maximum dependability and economy.

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MARVEL-SCHEBLER
CARBURETERS
MARVEL-SCHEBLER PRODUCTS DIV., Borg-Warner Corp., Decatur, Ill.

SELECT A *Sterling* THAT FITS YOUR JOB!



There's a Sterling Barrow for every type of hauling job, whether it's dry, bulky materials like sawdust or heavy industrial loads like castings or steel parts. Also special barrows for brick, tile, coal, concrete block and similar materials. All barrows are scientifically designed, well balanced and sturdily constructed for a long service life. Choice of wood handles or tubular steel frame, steel wheels or pneumatics. Write for new Sterling Wheelbarrow Catalog No. 61.

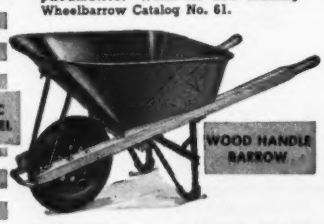
(Above) *Model D3½S* Maximum Capacity 3½ cu. ft. 16 gauge tray, all welded, no rivets, double lapped at corners. Steel channel legs. V-shaped front braces and brace support.

12 SPOKE STEEL WHEEL

PNEUMATIC TIRED WHEEL

(Right) *Model C5W* Maximum Capacity 5 cu. ft. 16 gauge tray, all welded, no rivets, double lapped at corners. Heavy-duty malleable wheel guard.

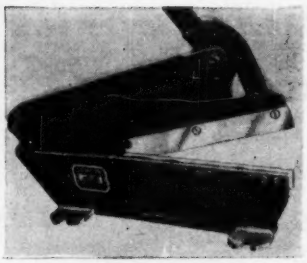
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STERLING WHEELBARROW CO., Milwaukee 14, Wis.

Look for this Mark of STERLING Quality

Sterling WHEELBARROWS



SHEET METAL SHEAR—The Samson No. 40 slitting shear has a blade length of 14 in., which makes it suitable for cutting wide strips of light-gage metal in one stroke of the lever. An offset frame permits slitting sheets of any length or width, and the machine will cut wide sheets faster and with fewer strokes of the lever than shears with shorter blades. The shear's capacity is ⅛-in. mild steel sheet plate; the net weight is 140 lb. Model 40 has two lettered suffixes, S and C. The S is for straight blade, as shown; the C for shearing corrugated metal up to 16 gage.—**Julius Blum & Co., Inc., 540 W. 22nd St., New York 11, N. Y.**

SMALL CAPACITY, HIGH-HEAD PUMP—The BJ Subette pump is a small submersible type designed for small capacities at high heads from wells of 6-in. inside dia or larger. The pump has a capacity range from 30 to 130 gpm at heads from 80 to 770 ft. The motors, available in sizes of 5, 7½, 10 and 15 hp, are 3-phase, 60-cycle, 2-pole, 220/440-v and have a speed of 3,500 rpm. All motors are oil-filled, mechanically sealed, and capable of operating completely submerged in water. This type pump eliminates alignment and bearing protection problems of shaft-type installations.—**Byron Jackson Co., P. O. Box 2017, Terminal Annex, Los Angeles 54, Calif.**

7 - IN. INDUSTRIAL SANDER—Weighing only 7½ lb, yet with ample power and capacity for continuous production use, a 7-in. standard industrial sander is available, designed for fast sanding, wire brushing, grinding and polishing on metal, wood, tile plastic, glass, concrete and other surfaces. In addition to use with standard wheels, disks and brushes, it offers exceptional performance with the new laminated phenolic grinding wheels and disks. The No. 870 features precision-machined, heat-treated alloy steel gears. No-load speed is 4,500 rpm. The Universal-type motor is designed for dc or ac 25-60 cycles. Its rating is 5.5 amp at full load on 110-v current. Accessories include standard cup grinding wheels, wire cup brushes for removing rust, scale, and paint and laminated phenolic wheels and disks. —**Millers Falls Co., Greenfield, Mass.**




50-TON ON AIRPORT


FOUR-UNIT ON DAM


SIX-UNIT ON HIGHWAY

Southwest Compaction Rollers

SET NEW RECORDS for compacting heavier lifts with fewer passes. On the big jobs where maximum compaction is required the Southwest gets the work done quickly and efficiently.

Weight-box units of Southwest Compaction Rollers oscillate up and down independently and provide a constant, uniform compacting load on each tire regardless of ground contours. There is no bridging, no shifting of load from tire to tire.

Sectionalized tubular yoke allows the use of any combination from 3 to 6 weight-box units. Sizes and capacities range from 10 to 100 tons, suitable for light, medium or heavy duty compacting of earth.

Write for information

CONSTRUCTION MACHINERY DIVISION

Southwest Welding & Manufacturing Co.

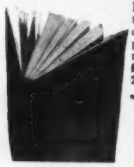
Alhambra, California

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Guessings fine for Fairs—or trips to Waikiki—BUT IT'S DEADLY TO GUESS ON MIXERS. That's why leading architects, engineers and contractors insist on A.G.C. rated mixers. To wear the A.G.C. plate, mixers and pavers must meet rigid specifications as to sizes and mixing capacity. Always look for the A.G.C. Rating Plate when you buy.



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Affiliated with the Associated General Contractors of America, Inc.

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THE FOOTE CO., INC. Nunda, N. Y.	KOEHRING COMPANY Milwaukee, Wis.	WORTHINGTON PUMP AND MACHINERY CORP. Construction Equip. Div., Dunellen, N. J.



LEATHER HAND PAD—GS Safti-Mitt Handpads offer maximum protection and comfort and are adjustable to any size through a tie string. Made of heavy genuine horsehide for long wear, they prevent costly hand injuries. Recommended for handling brick, tile, metal sheets, stampings, sharp-edge castings, cartons, and for many other uses where hand injuries are a risk. Fit any size hand and are available from **General Scientific Equipment Co., 27th and Huntingdon St., Philadelphia 32, Pa.**



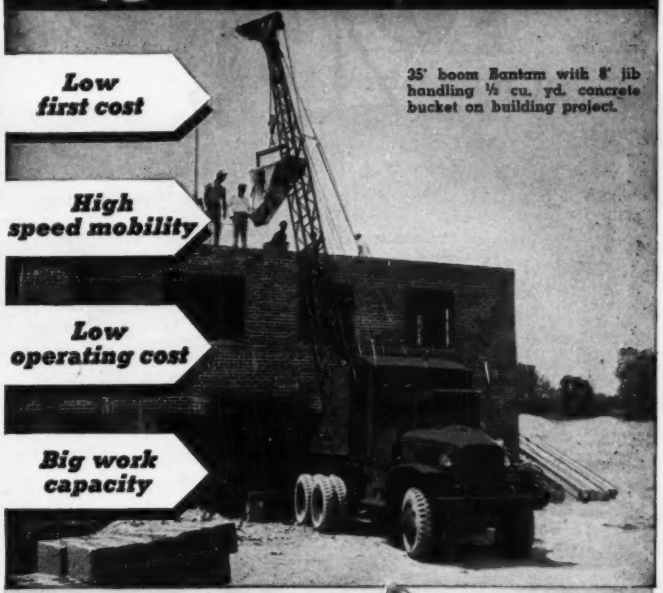
SILICONE TREATMENT FOR WALLS—After a half-hour flow of water from a faucet under 40-lb pressure, the upper half of this concrete block is still bone dry, as a result of one treatment with transparent and colorless Siliconiz. The lower (untreated) half is completely water-logged. This silicone treatment is not a sealer; rather, it leaves all the pores in masonry or concrete open so that it can "breathe." Each pore is lined with a coating of silicone, which effectively prevents any water from entering, yet permits it

(Continued on page 156)

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3000 BANTAMS®

enjoy owner preference



35' boom Bantam with 8' jib handling ½ cu. yd. concrete bucket on building project.

Bantam costs only a fraction of the price of bigger machines . . . goes anywhere in a hurry!

Thousands of satisfied Bantam owners will tell you no other machine at any price can match the speed and economy of a truck-mounted Bantam, for handling scattered or intermittent jobs . . . and even for production excavating and lifting, where frequent job moves are required. Mobile Bantam easily handles up to 10,000 lbs. . . . works with 50' boom . . . digs 100' of 5' trench per hr. as back hoe . . . loads up to 90 cu. yds. per hr.



Hoe digs to 14' depth without hand trim.

as shovel or dragline . . . can be equipped with low-cost magnet, clamshell, grapple, or 1400 to 2400 lb. pile driver for extra utility. See your Bantam Distributor for "on-the-job" proof, or write Schield Bantam Co., 221 Park St., Waverly, Iowa.

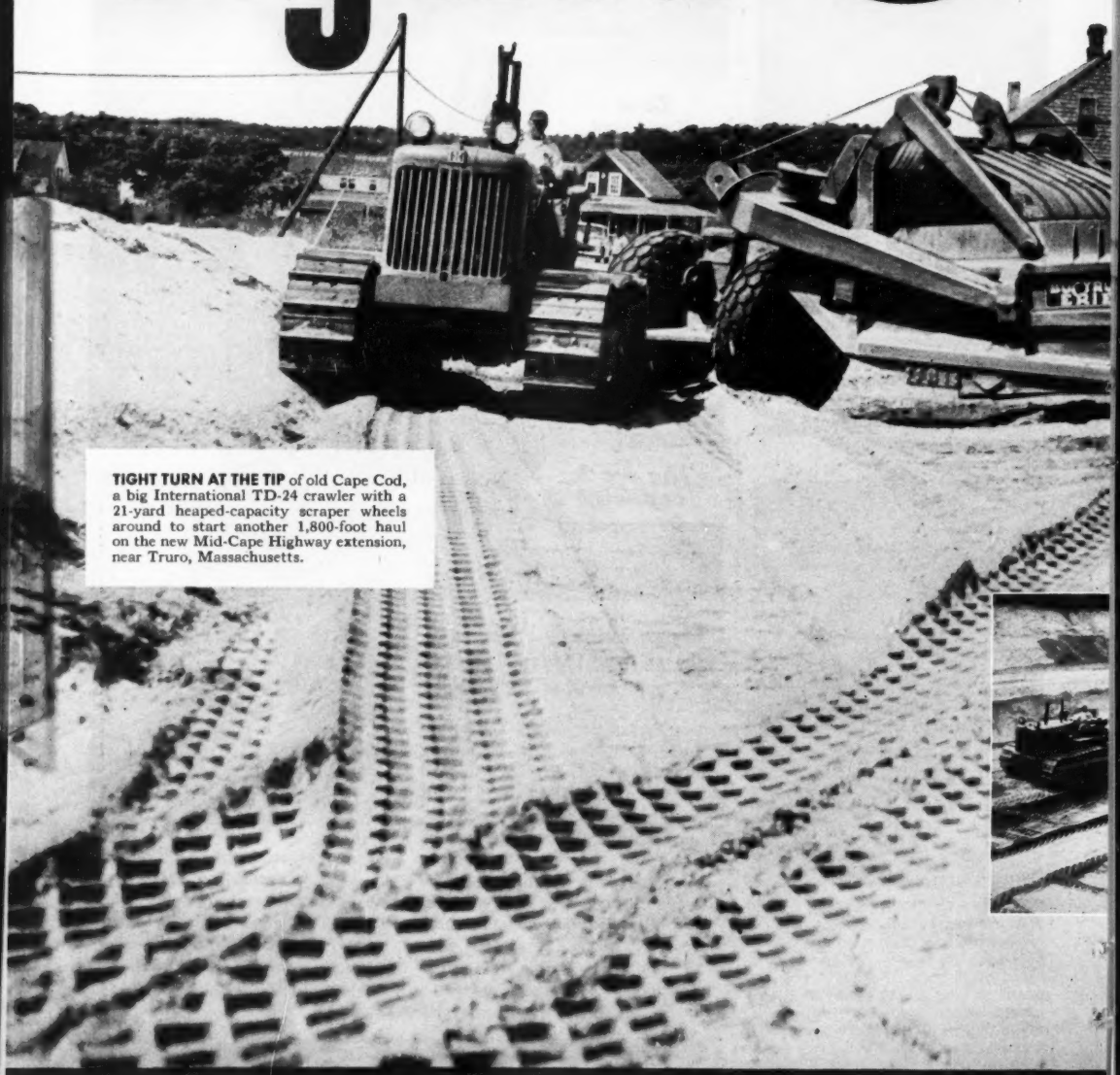
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Big Red TD 24



TIGHT TURN AT THE TIP of old Cape Cod, a big International TD-24 crawler with a 21-yard heaped-capacity scraper wheels around to start another 1,800-foot haul on the new Mid-Cape Highway extension, near Truro, Massachusetts.

takes the Cape





BIG RED EQUIPMENT. Here are three of the five Internationals on this job, dozing and hauling the loose, shifting Cape Cod sand. In some bogs, peat has to be replaced with sand, and 50-foot piles driven in for stability of the roadway.

Makes tracks near Truro on sand-slowed highway job

Out near the tip of Cape Cod, where the Pilgrims saw their first tracks of redskins in the sand, today's tourists see the tracks of big red Internationals.

They're extending the Mid-Cape Highway, and where the land isn't sand, it's bog and marsh. It's so bad the S & M Construction Company, of Providence, R. I., won't let many of its vehicles venture off the pavement. But the Internationals charge ahead, moving nearly half-a-million cubic yards of sand to build three miles of road.

Pride of the whole show is "Big Red"—the TD-24—pulling bigger loads faster than any other crawler can.

And here's what an S & M operator says about it: "I wasn't on this rig very long before I found out it was mighty nice to handle. I really pull plenty of dirt!"

"Big Red", with 148 maximum drawbar horsepower and up to 7.8 mph, has more power and speed than any other crawler on the market. And it has finger-tip maneuverability to make pivot turns, feathered turns, and turns with power on both tracks.

All this means a faster work-cycle and more paydirt moved per day.

Ask your International Industrial Distributor for details on the TD-24. Ask him, too, about his fast, ready service and speedy parts delivery. Get all the answers . . . and you'll be a TD-24 man from then on in!

INTERNATIONAL HARVESTER COMPANY, CHICAGO 1, ILL.

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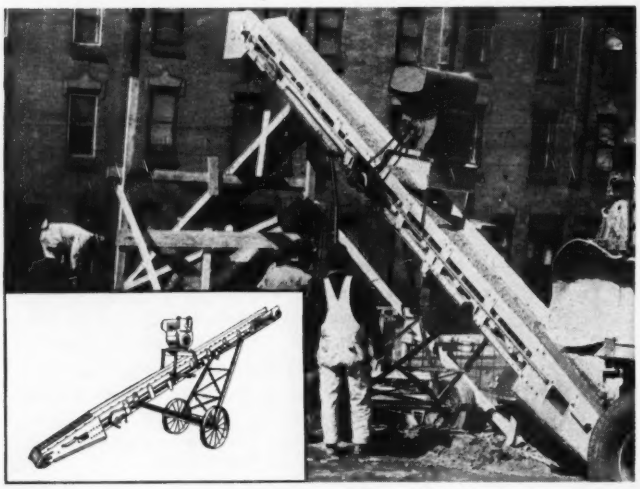
POWER THAT PAYS

INTERNATIONAL HARVESTER

One in a series of factual reports from owners of Farquhar Conveyors

FARQUHAR CONVEYOR SAVES $125 A WEEK ON CONSTRUCTION JOB*

*at M & L Construction Company, Philadelphia, Pa.



THIS Farquhar Conveyor, used by the M & L Construction Co., unloads 6½ cubic yards of wet concrete in 10 minutes, direct to forms. On one job alone, it saved the labor of two or three men—saving $125 a week, and quickly defraying the Conveyor's initial low cost of $1200. In addition, costly runways, scaffolding, buggies and wheelbarrows were eliminated!

Whether you move coal, gravel, sand, aggregates, cartons, boxes, bundles, bales, or any kind of bulk or packaged materials—horizontally or from floor to floor—Farquhar can cut *your* handling costs to rock bottom! One or more of the complete line of Farquhar portable, semi-permanent and permanent conveyors will solve your handling problem. Our engineers will be glad to consult with you . . . at no obligation!

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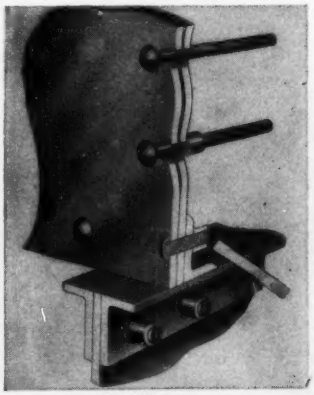
WRITE for complete information to A. B. FARQUHAR CO., Conveyor Div., Dept. M-26, 142 N Duke St., York, Pa. or 618 W. Elm St., Chicago 10, Ill.

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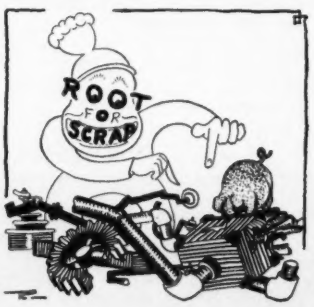
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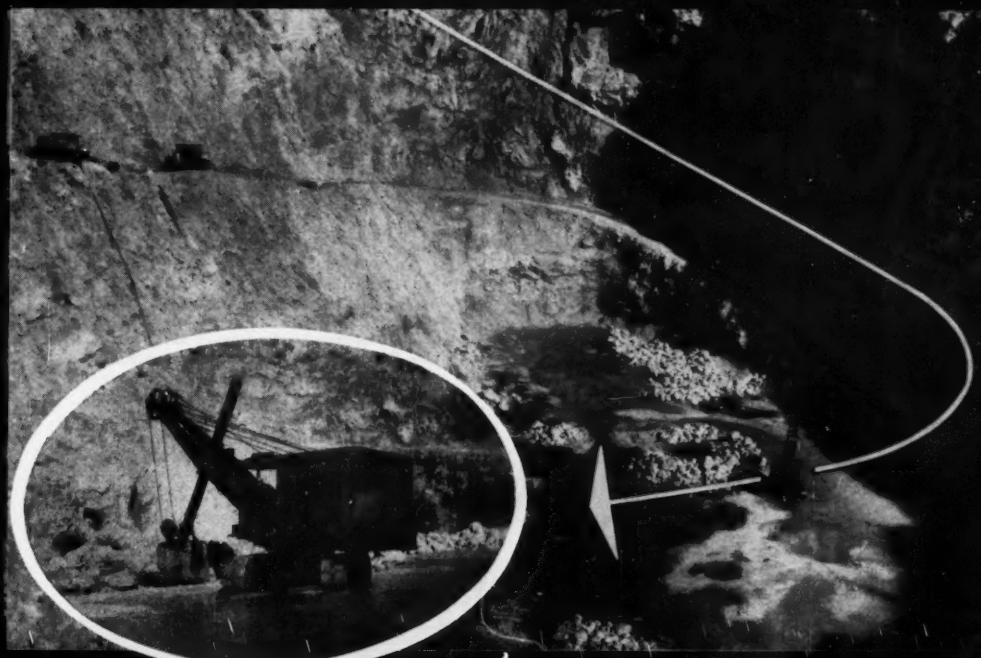
(Continued from page 153)

to pass out, carrying any internal water-vapor with it. Transparent, it does not change the color, texture, or appearance of masonry in any way. Further, it keeps masonry walls clean by preventing absorption of dirty water. Applied by swabbing or spraying with a hose, it dries in a matter of minutes and can be applied in almost any weather.—**The Lockrey Co., Southampton, N. Y.**



LOCK BOLTS—A manufacturer of a broad line of blind rivets and structural fasteners announces the addition of Lock Bolts. These are high-strength, two-piece fasteners consisting of a pin and a collar. The pin is inserted in the work from one side, and the collar from the opposite side. A pneumatic tool engages serrated grooves in the shank of the pin. Exerting a pulling action on the pin, the tool simultaneously pushes the collar against its material, clamping the material tightly together. Tool swages collar into pin grooves, breaking the pin flush with the collar. The manufacturer says that when these bolts are installed they weigh only 50% of an equivalent sized bolt and nut. Strength values are equal or greater than same sized AN bolts. Diameters range from 3/16 to ⅜ in. A variety of head styles is available.—**Hixson & Jorgensen, Inc., 600 St. Paul Ave., Los Angeles 17, Calif.**





LOOK AT THIS LORAIN AFTER MOVING 2½ MILLION YARDS OF ROCK!

LOOK ***at this record!*** After more than 12 years and 2½ million yards of hard digging, this 1½-yard Lorain-79 shovel *is still at work* for R. A. Wade & Co., Bessemer, Ala.

LOOK ***at that quarry!*** It's 200 ft. deep and millions of yards of tough dolomite limestone have been dug from it by this Lorain to feed blast furnaces in Birmingham. Surely, here's a job that calls for the best in shovels.

LOOK ***at the Lorain!*** It's still digging rock—still in good working condition. In 1939, as now, Lorains were built to break records in rock—proof of Lorain quality, stamina and endurance in the toughest kind of digging.

LOOK ***at the results!*** Imagine the earning power of this veteran Lorain . . . the profits it has paid . . . the satisfaction it has given its owner. These are reasons why R. A. Wade & Co. have 3 Lorains—why they bought the new Lorain-50 shown at the right!

● *Ask your Thew-Lorain Distributor for more proof of Lorain performance records!*

THEW LORAIN



NOW **LOOK AT THE NEW 50**

This is Wade's newest Lorain.

They've just opened a new quarry and Lorain again is the choice. This time it is a 1-yd. Lorain-50. Equipped with shock-absorbing hydraulic (fluid drive) coupling, air assist on crowd, retract and hoist controls—air steer and tread lock—plus many other new and modern features — the Lorain-50 — today's newest Lorain—is built to surpass even the amazing records of previous Lorain models—some still on the job after a quarter of a century or more!

THE THEW SHOVEL CO., LORAIN, OHIO

CLYDE WHIRLETTE

"the answer to our prayers!"

The erecting of steel for a fifth and sixth floor addition to an existing structure presented a difficult problem due to load limits on the roof. A Model W-3 Whirlette was recommended for mounting on a carriage which could be railed over the existing structure on the steel permanently placed for the beginning of the fifth and sixth floor additions. This accomplished weight distribution well within the load limits and made it possible for the contractor to permanently position beams weighing approximately 3,100 pounds.

Two new, Whirlettes

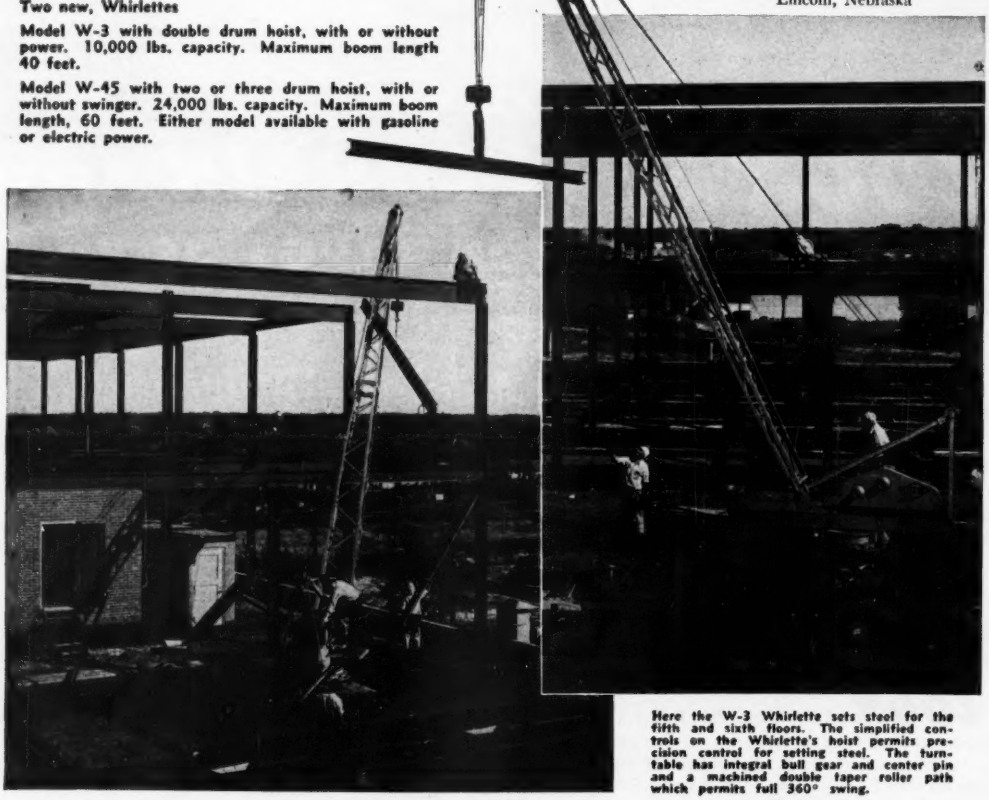
Model W-3 with double drum hoist, with or without power. 10,000 lbs. capacity. Maximum boom length 40 feet.

Model W-45 with two or three drum hoist, with or without swinger. 24,000 lbs. capacity. Maximum boom length, 60 feet. Either model available with gasoline or electric power.

. . . the contractor says--

"The smoothness and efficiency with which the Whirlette performs this feat has won the acclaim of all the iron workers who are connected with the operation and who have an opportunity to see the performance. To be very frank, it has been the answer to our prayers, particularly on this job."

J. J. Watson
Olson Construction Co.
Lincoln, Nebraska



Here the W-3 Whirlette sets steel for the fifth and sixth floors. The simplified controls on the Whirlette's hoist permits precision control for setting steel. The turntable has integral bull gear and center pin and a machined double taper roller path which permits full 360° swing.

WHIRLEYS • DERRICKS • HOISTS • BUILDERS TOWERS • CAR PULLERS • HANDI-CRANES • ROLLERS

CLYDE IRON WORKS, Inc.

DULUTH 1, MINNESOTA

Subsidiary of Barium Steel Corporation

You get the same strength with less steel

when you use American Welded Wire Fabric

● A quick glance at the American Concrete Institute Code will show you how to save steel by buying American Welded Wire Fabric for concrete reinforcement.

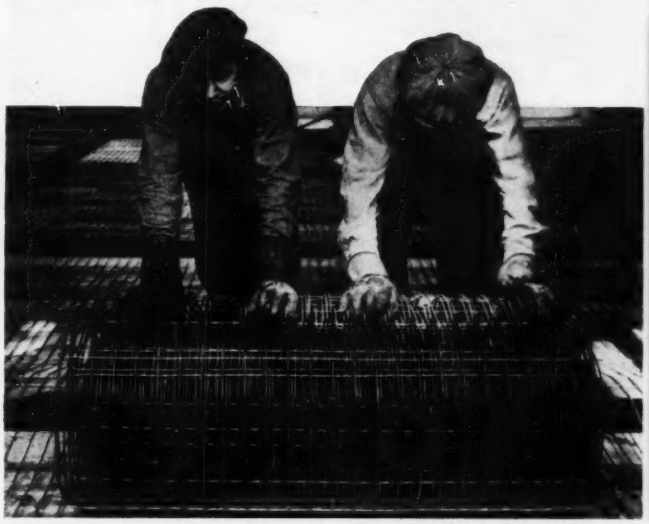
In the first place, American Welded Wire Fabric is allowed a 40% greater working stress than ordinary reinforcing materials. That's because our fabric is manufactured by the electric welding process from *cold drawn* steel wire having a guaranteed yield strength of 56,000 psi. Compare that to other reinforcing materials! Also, cold drawn wire has no well-defined yield point. It continues to resist stress throughout its entire strength range. And the ultimate tensile strength is *70,000* psi. Each welded intersection of the wire in the fabric provides special anchorage of the reinforcing members in the concrete slab.

When you use American Welded Wire Fabric for reinforced concrete walls, you can use *28% less steel area* than with ordinary reinforcing materials. You just don't have to buy so much steel to do your job. This specification is partly due to the high strength of American Welded Wire Fabric, and to its efficient bond provided by small high strength members closely spaced and by the positive anchorage provided by the cross wires rigidly welded to the longitudinal wires.

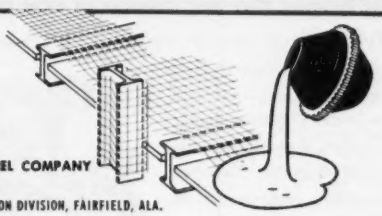
But here's the best part: American Welded Wire Fabric is a prefabricated reinforcing material that is easy to install. Labor costs for placing will go down drastically. As a matter of fact, installation is so easy that there's simply no comparison with other materials.

Many standard designs and sizes are now available from jobbers' and dealers' stocks as well as prompt mill shipments to identified projects. Present CMP Regulations assure adequate warehouse stock of Welded Wire Fabric. If you would like further information, or literature, just drop a line to our nearest sales office.





This sketch shows where American Welded Wire Fabric is used in modern concrete buildings. It reinforces walls, floors and roofs, can be draped over beams and girders and wrapped around pillars. Many uses of concrete in irregular structural shapes are made practical by American Welded Wire Fabric reinforcement.



AMERICAN STEEL & WIRE DIVISION, UNITED STATES STEEL COMPANY
GENERAL OFFICES: CLEVELAND, OHIO
COLUMBIA-GENEVA STEEL DIVISION, SAN FRANCISCO · TENNESSEE COAL & IRON DIVISION, FAIRFIELD, ALA.
UNITED STATES STEEL EXPORT COMPANY, NEW YORK

Every type of concrete construction needs

U·S·S AMERICAN WELDED WIRE FABRIC
reinforcement

UNITED STATES STEEL

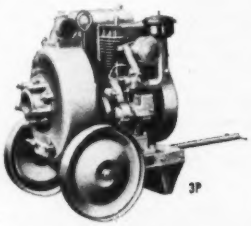
a JAEGER never races to prime



*Dewatering 1500' of 8' x 14' deep sewer trench at a river crossing, this 4" Jaeger pump handled 40,000 gph at an average speed of only 1200 rpm (10% to 15% lower speed than other pumps), and reprimed quickly, as needed, at 1400 rpm (compared with 1800 to 2000 rpm required to prime ordinary pumps).

Pump longer because they pull stronger at easy speeds

Jaeger "Sure Prime" Pumps are built oversize with larger shells and impellers, and generously powered. They hold more priming water and are subject to less abrasive wear. Exclusive double priming action is fast, dependable, without harmful racing of engine. No vapor lock even when pulling high vacuum on long intake lines—sustained efficiency on non-stop pumping, and thousands of extra hours of service from both pumps and engines.



Other sizes 1½" to 10"

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THE JAEGER MACHINE COMPANY

800 Dublin Ave., Columbus 16, Ohio

COMPRESSORS • MIXERS • HOISTS • TOWERS • PAVING MACHINERY

NEW EQUIPMENT BRIEFS

Two-coat-a-day wall painting is uniformly possible with a **sealer-coater** which has been placed on the market after more than 2 yr of field testing and trial marketing by **E. I. Du Pont De Nemours & Co.** The new product dries in less than 2 hr under normal conditions. It can be applied over dry-wall construction, wall board, oil-type flat wall paints or enamels, resin-emulsion paints and bare plaster.

Masonite Corp. has made available ⅛- and 3/16-in. standard and tempered **Duolux hardboard.** More dense than tempered Presdwood, it is an ideal hardboard product where exposed uses require a panel with two smooth faces. Tempered Duolux is recommended, rather than standard Duolux for all applications involving wear, high or extremely fluctuating humidities and exposure to the elements.

Keeping track of expensive equipment, and aiding the return of tools to proper storage is a big job which **decal nameplates** are helping to make easy, as designed by the **Meyercord Co.,** Chicago. Shovels, power tools and other equipment, small and large, can be easily and permanently tagged, providing low-cost identification and advertising.

Hyflex gloves, a new line of plastic-coated gloves which will protect against water, acids, alkaline materials, oils and a variety of other corrosive chemicals, have been placed on the market by **Houghton Laboratories, Inc.,** Olean, N. Y. These canvas gloves are coated with abrasion resistant vinyl plastisol. The new application process makes possible exceptional adhesion to the canvas and freedom from pinholes.

Recently a number of steam generators of **Superior Combustion Industries, Inc.,** Boston, Mass., have been built especially for outdoor installation, and to cover the vital working parts, a special **canvas housing** has been designed, called a "dog house." While providing required protection, this housing makes all working parts readily accessible. Safety features include power lockouts to prevent operation with the doors closed when an engineer is in the enclosure.

A new **load binder** on the market, designed principally for military use, employs the compensating action of a sturdy spring. Over all types of terrain and under all conditions the spring binder maintains constant, uniform tension, eliminating breakage of chain and hooks to a marked degree. Four models begin at 9,000-lb capacity, and the spring gage pro-

vides continuous take-up action, despite change in sling lengths after delivery of partial loads. Manufactured by **Canton Cast Products Co.**, 2460 13th St., N.E., Canton 5, Ohio, they have been accepted after thorough performance and safety tests.

The **Mark-Rite Econo Liner** will put down approximately 10,000 ft of painted line per hr. With adjustable spring-loaded shields it will paint any width line from 2 to 6 in., marking as close as ⅛ in. alongside fixed objects. It has been especially developed by the **Universal Mfg. and Sales Co.**, 8716 Santa Fe Ave., South Gate, Calif. A flexible paint guide permits the machine to follow surface contour when painting on concrete, wood block, black top or brick.

A **built-in generator** has been developed for use with Towmotor electric pallet trucks, eliminating the need for conventional electric storage batteries and re-charging, and providing constantly available power for 24-hr operation. It is an adaptation of the standard electric pallet truck, made by **Towmotor Corp.**, Cleveland, Ohio, with a small, gasoline-powered generator supplying constant, maximum voltage for operation.

STANDARD STEEL PRESSURE DISTRIBUTOR



FULL CIRCULATING SPRAY BAR GIVES UNIFORM SPREAD OF MATERIAL THROUGHOUT LENGTH OF BAR . . .

SIMPLIFIED PIPING PERMITS FAST LOADING AND LAYING . . .

✓25% More Asphalt shot per day! Faster loading! No delays Starting! Instant cleaning at end of run! These are facts known to every operator of **Standard Steel Pressure Distributors!** Why? Because of the simplified piping in this equipment! The full circulating spray bar contains submerged valves which are quickly heated and remain uniformly hot at each point of pouring. The throw of a single lever opens and closes all valves instantly. Every inch of the spray bar delivers precisely the same material output—lightest or heaviest bituminous material. And there are 12 other special features that make this equipment outstanding in performance. Write for catalog 424 today for complete details.

OTHER PRODUCTS

Maintenance Distributors, Tar Kettles, Patch Rollers, Supply Tanks, Tool Heaters, Asphalt Tools, Street Flushers, Construction Brooms.

Built to Standard *the Highest*

PD3

Standard Steel Works, NORTH KANSAS CITY, MO.

Riggers PLAY IT SAFE on "high wire" jobs!



. . . that's why they demand GENUINE

CROSBY CLIPS



Drop-forged, hot-dip galvanized wire rope fasteners

SIZES FOR ⅛" TO 3" WIRE ROPE

DISTRIBUTORS EVERYWHERE

AMERICAN HOIST & DERRICK CO.
ST. PAUL 1, MINNESOTA

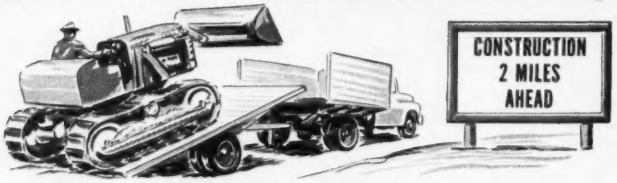
HOW TO MAKE 1 CONCRETE VIBRATOR DO THE WORK OF 2-

A prominent user of Vibro-Plus Internal Vibrators says one Vibro-Plus does the job of two ordinary vibrators. He says his concrete tests very high—and costs substantially less. Vibro-Plus will save money for you, too—cutting your concrete time and labor costs up to 60%. There are gasoline, electric and pneumatic models (with shafts and heads all interchangeable). All three deliver vibrating frequencies of from 11,000 to 15,000 per minute . . . yet operating and maintenance costs are low. Write today for bulletins and nearest distributor.



VIBRO-PLUS PRODUCTS, INC
54-11 Queens Blvd., Woodside, L. I.

. . . between-job travel for slow machines CUT to a JUMP with MILLER *Tilt-Top*



JOB-to-JOB time loss for slow moving machines is cut to a minimum when you have a MILLER handy . . . it's the *extra* trailer for *extra* production. Where large flat bed trailers are usually too cumbersome for lighter hauling, with MILLER Tilt-Top, self-moving equipment practically loads itself onto tilted platform and can be towed to the next operation in jig time . . . cutting non-productive "travel time" for operator as well as equipment. Standard platform is 14' x 8', optional 16' available.



MODEL "B" 10 TON $1175.* The following equipment is optional and extra: hydraulic tilt control, two speed winch, electric brakes.

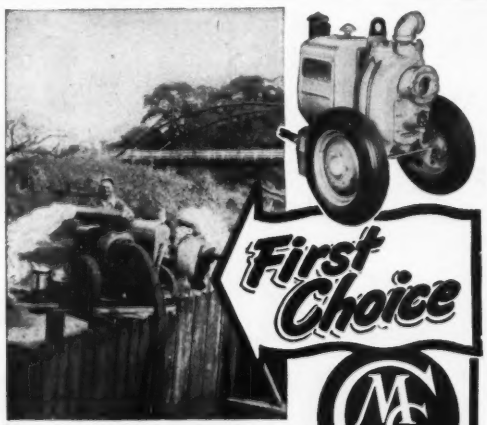
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- Available in sizes from 1½" to 10"— capacities from 3,000 to 200,000 gal. per hr.

CMC equipment is sold and serviced by leading equipment distributors everywhere.

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CONSTRUCTION MACHINERY CO'S.
WATERLOO IOWA U.S.A.

MIXERS-HOISTS-RADIAL SAWS-CARTS

New PUBLICATIONS From MANUFACTURERS

The catalogs and bulletins reviewed below will keep you posted on latest developments in construction equipment and materials available for your use.

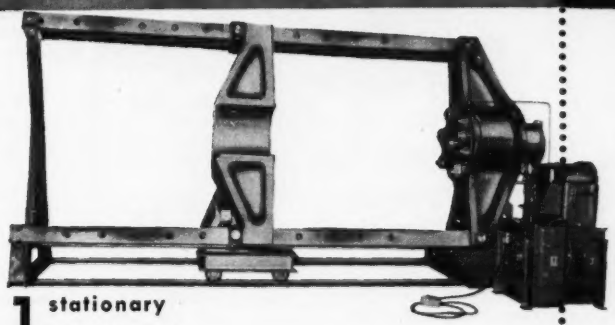
FLEXIBLE TUBING — Spiratube-M is a flexible, lightweight, reinforced fabric duct especially designed for mine and tunnel ventilation. Its unique design makes it most economical and efficient in conveying air to underground workers. This 8-pager describes the product's construction and advantages, such as rapid coupling and uncoupling ability and unimpeded airflow around bends. A 25-ft section of 24-in. tube scales at slightly more than 83 lb. Diameters range from 6 to 30 in., and injuries to the fabric can be patched easily with a handy repair kit.—**Flexible Tubing Corp., Guilford, Conn.**

SHOCKS ON HYDRAULICALLY OPERATED MACHINERY—A method of eliminating severe shock and vibration of hydraulically operated bucket loaders, power shovels and other tracked or rubber-tired equipment is described in Bulletin 700 just published. Since hydraulic fluid is practically incompressible, the vehicle itself must absorb impacts caused when a loaded bucket is moved or stopped suddenly, when the load suddenly is added or released, and when loaded equipment moves over rough terrain. The booklet explains how the installation of a Greer Hydro-Pneumatic Accumulator in the system absorbs these shocks fully. The accumulator consists of a steel shell containing a rubber bag precharged with gas. Hydraulic fluid forced into the shell through an oil compresses the bag, thus any sudden impact against the hydraulic fluid in the system forces oil into the shell where it is cushioned by the gas in the bag.—**Greer Hydraulics, Inc., 454 Eighteenth St., Brooklyn 15, N. Y.**

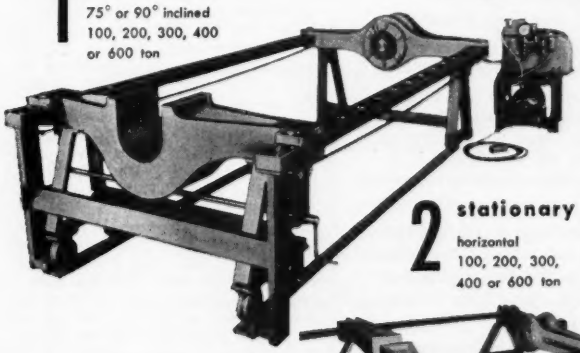
HOPPER CAR-UNLOADER — Bulletin 1530 concerns the latest material-handling development, namely, the Lippmann belt-type hopper car-unloader described as a hopper car unloader with economies of belt conveying. Rated capacity has been stepped up to 300 tons of coal per hr, and the machine is said equally to handle coke, sand, gravel, crushed stone or any other bulk material. The rubber-covered rollers eliminate elaborate hold-down devices where the horizontal boom meets the elevator. For complete information write **Lippmann Engineering Works, 4603 W. Mitchell St., Milwaukee 14, Wis.**

which of these forcing presses will do your jobs best?

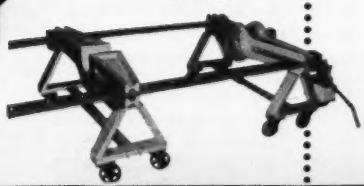
HYDRAULICS Rodgers KEEP THE WORLD MOVING



1 stationary
75° or 90° inclined
100, 200, 300, 400 or 600 ton



2 stationary
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3 portable
100 or 200 ton

NO MATTER which size and type best meets your requirements for pressing, bending, forming or straightening, you'll get a press with all the design and construction features that insure finest operation and long service.

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Send for New Catalog



Rodgers Forcing Press Catalog No. 315A has 20 pages of descriptions and specifications on the complete line. Ask for your copy.

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J-M Industrial Friction Materials are the No. 1 choice of most leading manufacturers of earth-moving equipment

Friction materials are so vital to smooth and satisfactory machine performance that most manufacturers choose them with utmost care.

They look for the *correct* combination of operating characteristics and maximum wear. That is why the majority of manufacturers of earth-moving equipment find exactly what they need in Johns-Manville Industrial Friction Materials.

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INDUSTRIAL FRICTION MATERIALS
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METRIC EQUIVALENTS—As a special service to the engineering trade, this company has compiled a combination conversion and decimal equivalent chart. On one side the chart converts inches to feet and metric equivalents. On the other side are the standard decimal equivalents. Protected by metal strips at both top and bottom and ready for hanging, the 17x22-in. Chart C is available from **The Frederick Post Co., 3650 N. Avondale Ave., Chicago 18, Ill.**

AIR-ENTRAINED CONCRETE — "Facts on modern placement of concrete through air entrainment" is the title of a 44-p book now available. Successive chapters tell what the air-entraining agent is, what it does for the contractor, what it costs, what it does for the concrete itself and how it is used. Charts, graphs, pictures and drawings are included in the booklet which describes Protex air-entraining agent. And one page of bibliography contains eleven selected references on air-entrainment of concrete.—**Autolene Lubricants Co., Industrial & Research Div., Denver 9, Colo.**

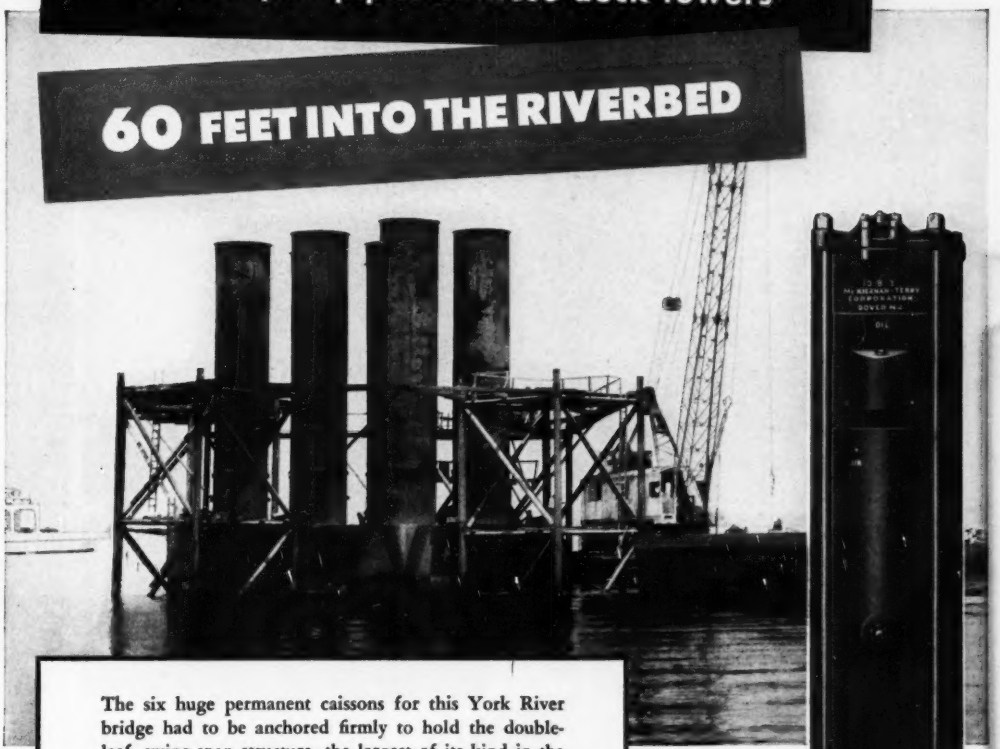
TRANSMISSIONS AND REDUCTION GEARS — Engineering data on transmissions and reduction gears are described and illustrated in a booklet put out by the manufacturer. The essential dimensions of single-speed reduction gears are shown on drawings. The company invites requests for information on diagrams, capacity tables, dimensions and complete specifications. In one typical example where a heavy-duty reduction unit was used, a contractor changed a crane from steam to diesel power and the Cotta reduction unit was used to adapt the new engine output speed to meet conditions in the original crane mechanism.—**Cotta Transmission Co., Rockford, Ill.**

DISCHARGE VALVE FOR HIGH AND LOW HEADS—A new 16-p color-illustrated bulletin No. 156 features the Howell-Bunger free-discharge valve for high and low heads. The chief advantage of the valve is the prevention of pot holes in the bed of a stream since the water is discharged in the form of a fine spray. Other advantages are explained in detail along with cutaway views, numerous illustrations of the valves in action and detailed specifications. —**S. Morgan Smith Co., York, Pa.**

MAINTENANCE GUIDE COMIC BOOK — This is a cartoon story presented in "Small Engine Maintenance Guide", a 28-p, 4-color service booklet published by Caterpillar. In the booklet, a dealer's serviceman shows how good maintenance will add many hours of top performance to engines. The booklet is labeled Form 30246, and copies are available from **Caterpillar Tractor Co., Peoria, Ill.**

This McKiernan-Terry Pile Hammer drove spud pipes in these dock towers

60 FEET INTO THE RIVERBED



The six huge permanent caissons for this York River bridge had to be anchored firmly to hold the double-leaf, swing-span structure, the largest of its kind in the world. That's why the contractors turned to a powerful McKiernan-Terry Double-Acting 10-B-3 Pile Hammer to drive the anchor tower spud pipes into the riverbed.

At each corner of the pipe anchor towers was a 14-in. OD pipe. Inside these pipes, 12¾-in. OD spud pile pipes from 140 to 150 feet long were driven 60 feet below the river bottom by the McKiernan-Terry Hammer. Piles for steel sheet cofferdams were also punched down quickly by a McKiernan-Terry No. 7 Double-Acting Hammer.

On scores of bridges throughout the country—and many other types of construction jobs—McKiernan-Terry equipment is playing a vital role. No wonder contractors rely on the power and dependability of McKiernan-Terry hammers and extractors. Wide range line includes 16 sizes of hammers and 2 sizes of extractors. Write for bulletin.

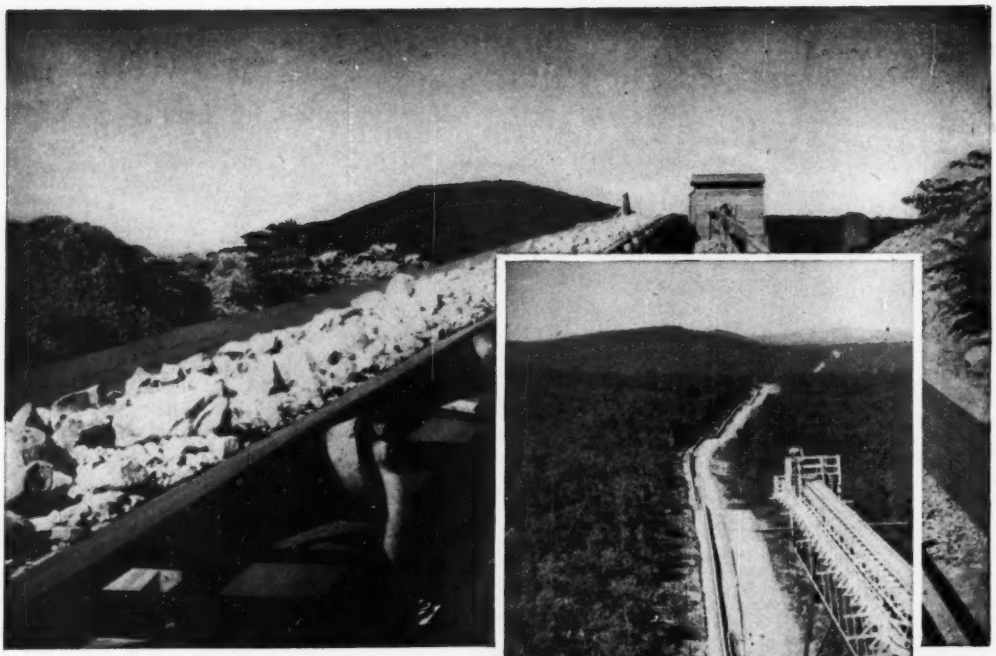
McKiernan-Terry 10-B-3 Pile Hammer which helped to build the substructure for the new bridge at Yorktown, Va. Massman Construction Co. and Kansas City Bridge Co. were the contractors.

McKIERNAN TERRY

McKIERNAN-TERRY CORPORATION · MANUFACTURING ENGINEERS · 14 PARK ROW · NEW YORK 38, NEW YORK

Plants: Harrison, N. J. and Dover, N. J.

MK 913



ROAD BED... NEW STYLE!

Here's the latest style in "road beds" to carry construction materials from their source to the job!

This road bed—a Hewitt-Robins Belt Conveyor—will transport those materials far more efficiently, more economically. For, with a Hewitt-Robins Belt Conveyor, no roads need be built (except for maintenance). No tracks need be laid. No expensive trucks need be bought, manned or maintained.

Grades can be mastered. Rivers, roads, and valleys can be bridged. When tunnels are inevitable, you provide a passage, not a highway!

Sound interesting? Then let's talk facts and figures. Send us the details of any project you have now, or intend to bid on. Include topographical maps. We will show you how conveyorizing may be more efficient, more dependable, more economical . . . a way to get jobs, a way to make more money on the jobs you do get. Write Contractor Service Department, Robins Conveyors Division, 270 Passaic Avenue, Passaic, N. J.

As originators of the modern belt conveyor, Hewitt-Robins makes *all* types—Hewitt-Robins alone makes *all the parts* . . . machinery and belt. And *only* Hewitt-Robins is able and willing to take complete, unified responsibility for design, installation and successful operation!

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"THIS IS INTERNATIONAL STEEL" is the title of a new book, designed to answer the problems construction men often face of where they can find certain building products and who can fabricate special jobs for them. It gives the builder a quick but accurate picture of what the company can do for him. Included are photographs and descriptions of many jobs where International has overcome obstacles that seemed insurmountable. The 44-p "catalog of sources" acquaints the customer with all the company's various products.—**International Steel Co., Evansville, Ind.**

WOOD PRESERVING BOOKLET—The American Wood-Preservers Association announces the issue of a completely revised AWPA Manual of Recommended Practice. It contains all of the current standards of the association relating to preservatives, treatment of commodities, and analysis methods used in the impregnation of wood for protection against fungi, insects, marine borers and other destructive agents. It also contains miscellaneous standards for the purchase and preservation of forest products, inspection and care of treated wood, and conversion factors and correction tables. It is a useful guide to the producer, consumer and ultimate user of treated wood products, as well as for specification writers, engineers, architects, purchasing agents, contractors and builders. Only confirmed standards are published in the new 150-p loose-leaf notebook. **American Wood-Preserver's Assn., 839 17th St., N. W., Washington 6, D. C.**

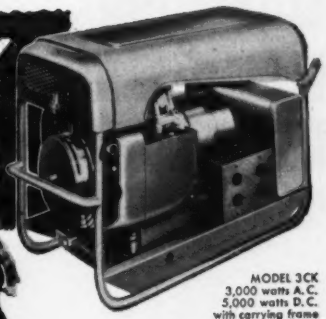
PIPE LINE STRAINERS—Here is a 16-p data manual (No. 951) on Zurn pipeline strainers. It describes several types for all purposes ranging in size from ½ in. to 36 in., some of which embody new concepts of design and function for making continuous production processes possible. The illustrated manual carries information on the factors to consider in selecting type and size of strainer for a specific application, and the effect of flow rate, screen loading and the viscosity of fluid on pressure drop.—**J. A. Zurn Mfg. Co., Erie, Pa.**

WHERE TO BUY

STOP *that* WATER

WITH FORMULA NO. 640. A clear liquid which penetrates 1" or more into concrete, brick, stucco, etc., seals—holds 1250 lbs. per sq. ft. hydrostatic pressure. Cuts costs: Applies quickly—no mixing—no cleanup—no furring—no membranes. Write for technical data—free sample.
Haynes Products Co., Omaha, Neb.

Cut Costs!
with **ONAN** *portable*
ELECTRIC PLANTS



MODEL 3CK
3,000 watts A.C.
5,000 watts D.C.
with carrying frame
or dolly-mounted



Take 'em Anywhere!

Increase your profits by using fast-working, cost-cutting electric tools on every job, even where highline power is not available. Lightweight, sturdy, Onan engine-driven electric plants supply instantly-available power *anywhere* for lights, drills, saws, pipe-threaders, planers, spades, tampers, repair-shop tools and other motor-driven equipment. Carry 'em, wheel 'em, or truck 'em right to the spot and plug in for all the power you need. Equipped with carrying handles or dolly-mounted.

Lightweight Air-Cooled Models: A. C.—400 to 3,000 watts. D.C.—750 to 5,000 watts. Heavy-duty models to 35,000 watts.

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CLUTCHES, TAKE-OFFS, and REDUCTION UNITS

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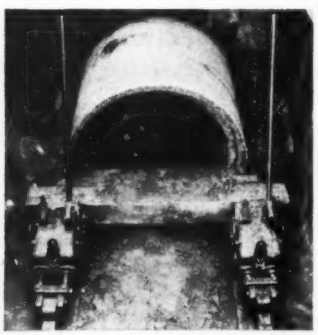
SAVE HOURS,

CUT COSTS ON YOUR

PIPING JOBS



PUSH PIPE UNDER STREETS, TRACKS, walks, floors and other obstacles with a GREENLEE Hydraulic Pipe Pusher. One-man-operated, portable, simple to operate. No tearing up of pavement . . . eliminates extensive ditching, tunneling, back-filling, tamping, repaving. Cuts job time to a fraction. GREENLEE Hydraulic Pipe Pusher often pays for itself on first job. Two sizes—model shown above for pushing ¾ to 4" pipe. Larger unit, below, for pipe over 4", concrete sewer pipe and large drainage ducts. Power pump also available for extra ease and speed of operation.



GREENLEE

Write today for descriptive literature. Greenlee Tool Co., 2183 Columbia Avenue, Rockford, Illinois, U.S.A.

EARTHMOVING . . . Continued from p. 123

on both sides of the shovel, so that one truck can get into position while the other is being loaded.

8. Refuel and do major greasing after end of shift and during lunch periods.

9. Avoid production delays by continual and careful inspection for completeness of greasing and prompt repair of any parts which begin to show signs of failure.

10. Sweeping the ground sidewise with the dipper is permissible only with light pressure on the swing clutch and at slow speed to limit twisting strains on the boom and bending of dipper sticks.

11. Avoid striking the boom or crawler tracks with the shovel dipper.

12. Keep dipper tooth points sharp for fast and easy filling of dipper.

13. Keep supply of perishable parts (wire rope and dipper teeth) on or near the machine for quick replacement.

14. Never leave the machine in a pit or low spot over night so it will not be flooded in case of a heavy rain. Always lower the dipper to the ground, set brakes and lock the cab when leaving the machine at end of shift, especially when it is located where children or unauthorized persons can get to it.

15. Keep the machine clean. It makes inspection easier and is the mark of a good operator and careful supervision.

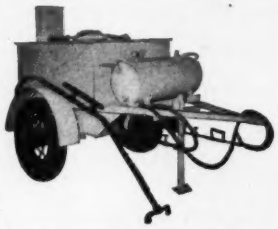
Hoe Operation

• **Dipper size**—The hoe dipper size selected usually is about the same as the shovel dipper capacity or slightly larger. Standard hoe dippers of each size as made by vari-

(*Continued on page* 170)

TABLE C

Dipper Capacity Cubic Yards (struck)	Bucket Outside Width Inches	Total Width Added for Two Side Cutters	Weight
⅜	20 to 24	4 or 6 in.	850 lb.
½	24 to 28	4 to 9 "	950 "
⅝	28 to 33	4 to 9 "	1100 "
¾	28 to 39	4 to 9 "	1400 "
⅞	28 to 45	4 to 9 "	1500 "
1	33 to 45	4 to 9 "	1700 "
1¼	39 to 45	4 to 9 "	2000 "
1½	39 to 45	4 to 9 "	2300 "
1¾	39 to 45	4 to 9 "	2200 to 2500 lb.
2	47 to 55	4 to 7 "	2400 to 4000 lb.



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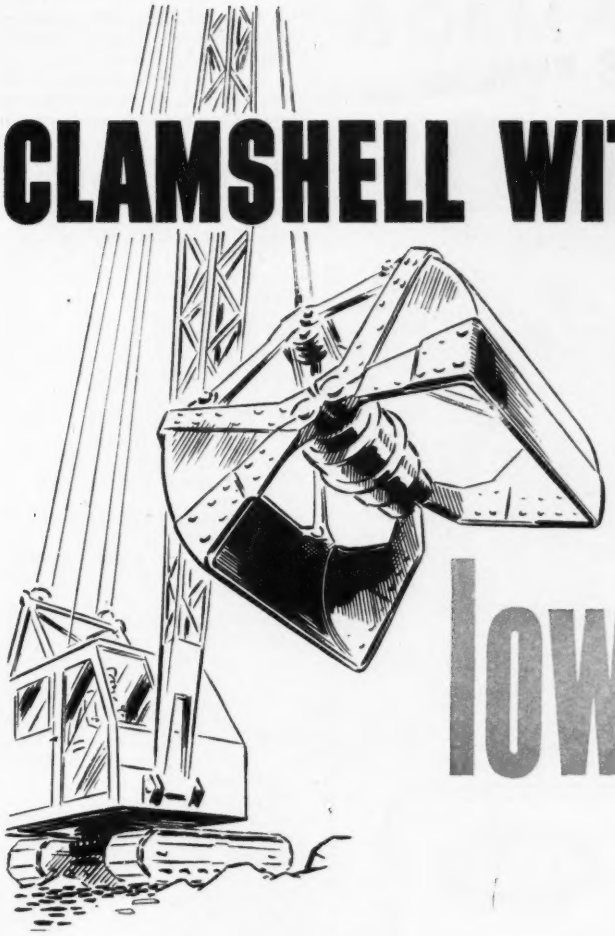
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EARTHMOVING . . . Continued from p. 168

ous manufacturers are approximately the same width and weight. Greater widths are obtainable by use of side cutters having more flare. *Table C* shows typical hoe dipper sizes available as standard equipment.

• **Hoe operation**—Hoes primarily are used for trench excavation and can handle a wide variety of material in this kind of work. At moderate depths their output may at times approach that shown in *Table A* for shovels. Output falls off considerably at greater depths. Hoes have certain advantages over shovels in basement digging because they require no ramps that have to be backfilled and tamped. They also can dig utility trenches and they work on firm top ground. They can dig a more vertical wall with less radius at the bottom of the cut.

Hoes can be used for grading and ripping broken pavement or for cleaning up ore pockets against bedrock more satisfactorily than shovels. A hoe is better than a dragline in controlling grades and producing vertical side walls, but it does not have the digging and dumping range. Being rigid, it is more suited to close range work and dumping into hauling units than a dragline. It has nearly twice the digging power of a dragline in hard material.

The most effective digging action occurs when the digging arm is about at right angles to the boom. The greatest output is maintained if the dipper is not swung out any more than necessary to get a loaded dipper. Dig close to the machine. The dipper fills better when being pulled upward near the machine because the material rolls back into the bucket more easily.

• **Machine adjustments**—The digging line clutch should be set so that it will slip before stalling the engine. A hoe is so rigid and the cables are so short that when the dipper catches on something solid, it will easily overstrain the cable or break it, unless the digging clutch can slip when full engine torque is reached.

Hoes are hard on both hoist and digging brakes. Like the shovel hoist, the brakes should be kept tightened only enough to hold the load when the brake pedals are near the floor for maximum mechanical advantage.

Improper operation of the machine can cause brake lining temperature to rise so that even the

best grades of lining may begin to fade to the point where the operating effort becomes heavy. Also, when brake drums heat up, they get much hotter than the external steel brake band and thus the drum expands more. This added expansion of the drum has the same effect as tightening the brake adjustment, causing the engaged position of the foot pedal to rise where the mechanical advantage of the linkage may be less favorable.

Therefore, the operator should handle the machine to reduce the heating of hoist and digging brakes and clutches. Although the digging clutch should be set to slip before overloading the line, it should be fully engaged during the digging stroke so that there will be no slippage under normal digging effort. The operator should completely release the hoist line brake for as much of the time as possible, because this line must pay out during digging.

Any drag on this brake opposes the digging line force and can produce a lot of heat. It is necessary to partially hold this brake when grading to the desired level, but these grading passes should be held to a minimum. Allow the dipper to fill as rapidly as possible on most of the passes so that the hoist line can be allowed to pay out freely.

Heating of the digging brake is reduced when the dipper is not swung out so far. Much of the heat in a digging brake can come from the internal clutch if it is allowed to slip during normal digging.

• **Abuse of hoes**—Improper handling of a hoe can cause excessive maintenance of dipper and hoe attachment. If a dipper and hoe boom are allowed to drop any distance to solid material, the impact can badly overstress these parts. Thus, if a dipper is allowed to drop freely for the last 12 in. in a chopping motion on to solid rock and, assuming the teeth penetrate for ½ in., the loads put into the teeth would be about 24 times the weight of the dipper and hoe arm. When all of this load comes on one outside tooth or side cutter, severe twisting strains are put into the hoe arm and boom. Furthermore, if the direction of impact is not in line with the tooth, it can be broken due to bending.

A hoe dipper should never be used as a rock or paving breaker. Blasting or the use of a breaker ball is cheaper.

Ed. Note: The sixteenth article in this series will appear in the April issue.

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Abrasive Ores No Match for Modern Drilling Equipment

Modern rock drills, carbide-tipped bits, and Bethlehem hollow drill steel make a winning combination for drilling abrasive sulphide ores at the properties of New Park Mining Company, Keetley, Utah. Although lead and zinc are the principal ores mined on their 5000-acre property, smaller amounts of copper, silver and gold are also recovered.

In drilling hard, abrasive diorite on the 1500-ft level of the Mayflower Mine, for example, modern jumbo-mounted drifters are used to put in 6-ft holes with 1⅛-in. round Bethlehem hollow drill steel and detachable bits having tungsten-carbide inserts.

A stope on the 1020-ft level provides ore that is somewhat easier to drill. Here they use 1-in. quarter-octagon Bethlehem hollow drill steel and conventional detachable bits to put in blast holes 5 ft deep with fast-drilling stopers.

Organized in 1932, New Park Mining Company now has about 225 employees. From the beginning of their operations they have relied on Bethlehem hollow drill steel for low-cost drilling.

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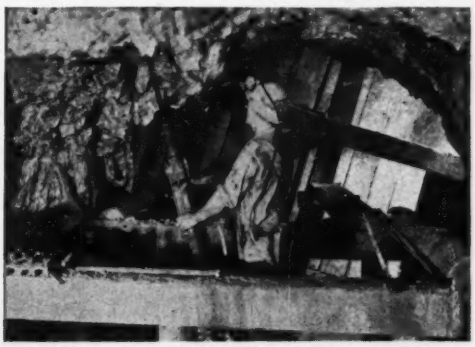
Underground operations of New Park Mining Co., Keetley, Utah, are served by a steel reconditioning shop, compressor plant, and other facilities at the portal of the Mayflower tunnel.



Jumbo-mounted drifters, using Bethlehem drill steel and carbide-tipped bits, put in holes 6 ft deep. This fissure traverses hard diorite porphyry 3 to 8 ft wide with bands of sulphides in quartz gangue.

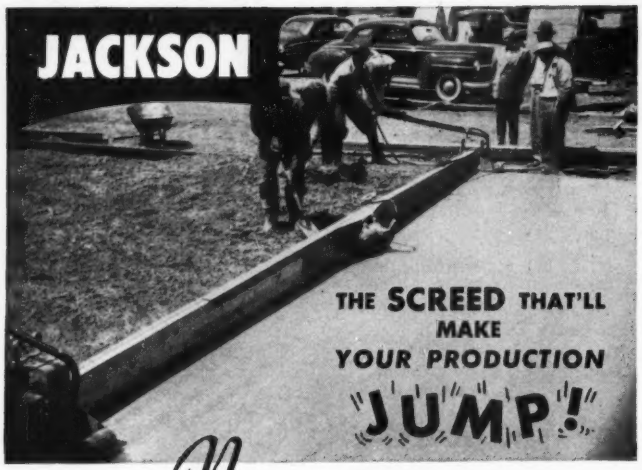


All aboard! The work shift starts underground at the Mayflower Mine.



Stopers on the 1020-ft level drill holes 5 ft deep, using Bethlehem hollow drill steel and conventional detachable bits. This fissure is 7 ft wide with banded lead-zinc sulphides.

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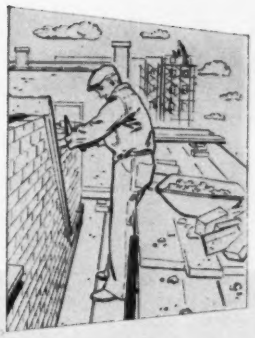
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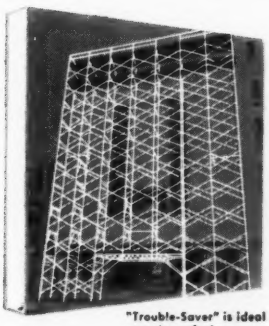
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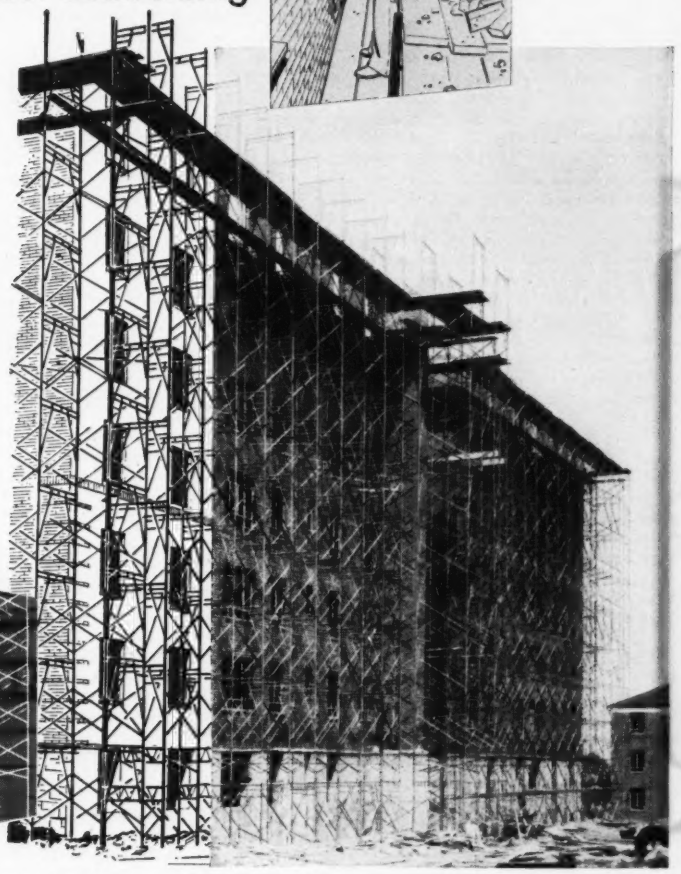
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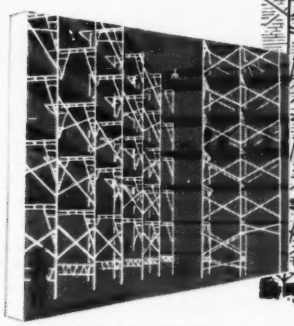
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West Coast Plant: 6931 Stanford Ave., Los Angeles 1, Calif.

Methods Memo . . .

WHO GETS HURT? When this question is brought up in safety meetings or bull sessions, normally it is agreed by all hands that the new, inexperienced employee and workers in the older age bracket are most susceptible to injuries on the job. But take a look at this one, sent us by the National Safety Council, as contributed by the Stanolind Oil and Gas Co. Stanolind records show that in 1950 81% of the employees injured had 2 yr of service or more. About 13% of the operating personnel were 50 yr and older; this group had 6% of the injuries. The younger lads—under 30 and comprising about 37% of the operating personnel—sustained 53% of the injuries. Safety supervision must be constant for every man on the job.

"OPERATION FIELD EXPERIENCE" recently was carried out by the Rish Equipment Co., Richmond, Va., when its 60 salesmen put on overalls and spent four days operating the construction machinery they sell. An armada of tractors, shovels, graders and related equipment was put through its paces by the salesmen on a large parcel of vacant land. Two years ago, Rish took its sales staff on a 2,500-mi tour of plants that make the equipment they sell.

VITRIFIED CLAY PIPE warm-air ducts in concrete floor slabs are now used by a number of builders to replace metal for duct heating. Vitrified clay pipe has a heat conductivity about twice that of concrete and is placed to come within 3.5 in. of the slab surface. The pipe bonds well for thermal contact with the concrete and has strength to carry heavy loads, precluding the need for reinforcing mesh around it.

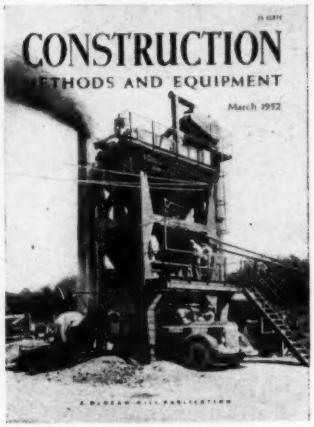
POSSIBLE VAST UNEMPLOYMENT in the construction industry is being attacked on all sides by groups affected by shortages of materials. State highway officials estimate that highway employees and highway contractors' employees total 315,250. B. D. Tallamy, New York State Superintendent of Public Works, says that federal allocations of steel for highways "have reached starvation levels". He adds that at present about 15 times as much steel is going into motor vehicles to run on inadequate New York highways as there is going into improvement of the roads themselves. The National Association of Home Builders has fought valiantly against deep slashes in the construction of new housing. Although the automobile industry in Detroit is calling emphatic attention to the unemployment situation brought on by curtailment in new car production—with not enough defense production to take up the slack—spokesmen for the construction industry say that unemployment in the auto industry soon may "look like a Sunday School picnic" compared with unemployment figures for construction workers across the country.

METHODS HAVE CHANGED in the construction business, we know. But it is interesting to get an occasional reminder of what it was like in the old days. Such a reminder is found in an interesting booklet by the Heil Co. (manufacturers of Heiliner scrapers, wagons, dozers, truck bodies and hoists among other things). It shows modern equipment in action and has sketches of how it used to be done. The occasion is the firm's 50th anniversary.

CONSERVATION OF STEEL through welded design is being fostered through an award program sponsored by the James F. Lincoln Arc Welding Foundation. Fifteen awards, ranging from $7,000 to $300, will be given for welded bridge designs submitted which show weight and cost savings over a comparable riveted bridge. Rule-setting and judging will be done by 14 leading bridge engineers. The competition closes July 15.

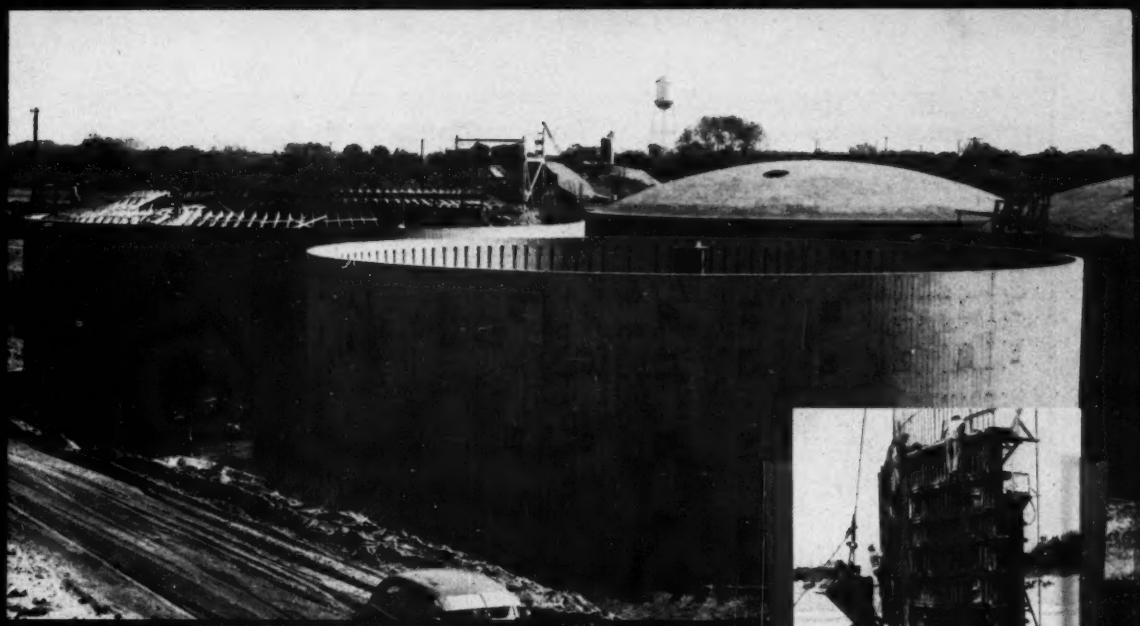
DEEP FOUNDATIONS under the perimeter of houses may be on the way out, if the results of 18 months of study and tests by the Housing Research Foundation of Southwest Research Institute, San Antonio, Tex., are a barometer. Findings indicate that perimeter foundations or grade beams contribute little strength or stiffness to structural floor slabs laid on grade. But it has been found that strength increases in geometric proportion with the center depth of the slab. (A slab of inverted pyramid design was the best at reasonable cost.) It was found also that by placing reinforcing steel diagonally in slabs instead of parallel with the sides, strength and stiffness were increased greatly at no increase in cost.

INCREASED USE OF TIMBER for general construction will release a large volume of steel and other critical metals for military purposes, claims the National Lumber Manufacturers Assn. The lumbermen point out that even the military continues to design in steel many structures and defense items that are equally good made of wood and for which materials are available. They remind us further that unemployment in the building trades in certain "hardship areas" could well be reduced by switching from scarce items to construction by wood.



On the Cover . . .

Smoke on the California skyline means highway progress in this case. The state's extensive program of highway modernization calls for converting many stretches of older roads into 4-lane freeways. One of these projects is a 4.1-mi relocation of US 101 between Atascadero and Templeton in San Luis Obispo County. For this job Jerry Farrar, Fresno, turned out from 800 to 900 tons of hot plant mix per day for the M. J. B. Construction Co., Stockton, from this beautiful Standard Steel Corp. 3,000-lb. batch capacity asphalt plant located half a mile off the new route. The mix was made up of Salinas River gravel and 200-300 penetration asphalt from 5C refinery at Santa Maria, particularly suitable for road work because of its low gravity. E. J. L. Peterson, district engineer, and V. E. Pearson, resident engineer, master-minded the project for the State Department of Public Works.



South Side Sewage Treatment Plant, Oklahoma City, Oklahoma. Engr.—Benham Engineering Co.; Contr.—Earl W. Baker & Co.—both of Oklahoma City, Oklahoma.

BETTER CONCRETE, SPEED, ECONOMY *with* POZZOLITH

This $4,000,000 sewage treatment plant is one of many hundreds built during the past twenty years in which Pozzolith was employed in the concrete to obtain important initial and long term benefits.

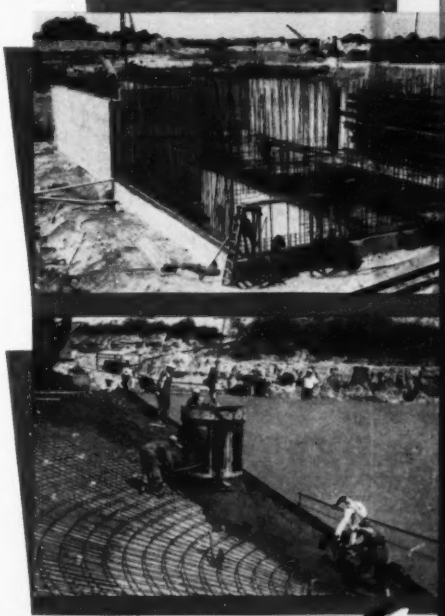
In addition to the advantages of easy placeability and good cohesiveness, Pozzolith provides low permeability and great resistance to corrosion and scaling.

Only Pozzolith's cement dispersion *puts more of the cement to work* . . . cuts water-cement ratio up to 15% . . . entrains the optimum amount of air. These are the reasons why only Pozzolith assures the following combination of advantages:

- MINIMUM SHRINKAGE
- MAXIMUM STRENGTH
- MAXIMUM DURABILITY
- MAXIMUM BOND OF CONCRETE TO STEEL
- MAXIMUM ECONOMY

Investigate the advantages of Pozzolith for your next job . . . it will enable you to obtain the qualities required at *lower cost than by any other means.*

More Than 9,000,000 Cubic Yards of Pozzolith Concrete Were Placed in 1951



the MASTER BUILDERS Co.

CLEVELAND 3, OHIO — Subsidiary of American-Marietta Company — TORONTO, ONTARIO

"Better in every way"

Says Frank Casilio about new pre-mix setup with Worthington Big Mixer



FRANK CASILIO, President of Frank Casilio and Sons, Bethlehem, Pa., ready-mix concrete producers, Fernando Casilio, Plant Manager, Joanne Casilio, Business Manager.

Output is *up* 35%, hauling time, truck maintenance and fuel consumption are down, at new Bethlehem, Pa., plant of Frank Casilio and Sons.

According to Frank Casilio, president of this ready-mix company, they *had* to modernize plant facilities to keep up with a constantly increasing business. So in 1949 the Casilio Company set to work to replace their existing transit-mix setup so as to increase output without sacrificing a reputation of unexcelled quality.

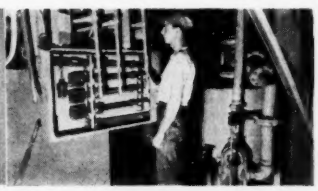
The resulting pre-mix installation—a model of efficiency—was achieved with the help of batching specialists and Worthington engineers. New facilities include a 2 yd Worthington Big Mixer, a fully automatic Worthington Water System, and 15 Worthington Hi-Up Truck Mixers.

Write for further data on Worthington Big Mixers and other Blue Brutes that can boost your plant's output and efficiency. Worthington Pump and Machinery Corporation, Construction Equipment Division, Dunellen, New Jersey.



"A MODEL OF COMPACTNESS AND EFFICIENCY." That's what construction people call this modern Casilio pre-mix plant at Bethlehem, Pa. All controls are situated within a 6-foot radius including those for the Worthington Big Mixer which charges or discharges in 12 seconds. Production's up over 30% with same haulage units—15 Hi-Up Truck Mixers like one in foreground.

HARRY HERBST, CASILIO'S BATCHMAN, weighs sand and stone on beam scales. Cement is weighed for batch by electric control. The fully automatic Worthington water system at right is equipped with leakproof poppet valves and patented measuring device.



R.2.3



If It's A Construction Job, It's A *BLUE BRUTE* Job

WORTHINGTON

Construction Equipment